

POPULAR LECTURES

SUBJECTS OF INDIAN INTEREST

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COLLECTED AND EDITED BY THE AUTHOR.



Calcutta:

PUBLISHED BY THOMAS S. SMITH, 12 BENTINCK STREET,
AND TO BE HAD OF ALL BOOKSELLERS.

1870.

PREFACE.

IN editing and presenting the following collection of my popular lectures on subjects of Indian interest, I feel it due to the Public to offer some explanation.

It will be observed that these lectures were delivered at various intervals during the past twenty years, and that each of them had a definite end in view. The first was suggested by the disgracefully bad sanitary condition of Calcutta at the time it was given, and its recommendations have now nearly all been adopted. The second was intended to recommend physical exercise to the native youth, and, although the gymnastic class established soon after it in the Hindu and Hooghly Colleges failed, the seed then sown has not been entirely fruitless, as is shown by the yearly increasing popularity of athletic sports among them. The third was given with the object of inducing native students to visit England to compete for the Covenanted Services—an object which has been since carried out. The fourth was in defence of native education during the Sepoy mutinies, when a great outcry

was raised against it, and various assertions put forth for its extinction. The arguments then used apply with equal force to the present time. The fifth and sixth were devoted to a psychological consideration of native education, with the view of pointing out its defects and their remedies: it will take years before those remedies are properly understood or applied. The seventh led to the formation of the Bengal Branch of the British Medical Association, which still continues to work beneficially. The letter to the Calcutta University was intended to raise the education and position of its Medical Graduates, and to institute, in connection with it, a Vernacular Medical Licentiate. Something has been done as regards the first object, but as to the second, although there is now a Vernacular Licentiate class in the Medical College, the University has done nothing yet. The object of the eighth lecture was to point out the actual state of the Medical profession in this country, the necessity for protection, and the reforms suggested by the altered relations of the different classes of practitioners in the Public service. The numerous changes made since then in these respects show that there was a necessity for it at the time. The ninth was designed to advocate further increase of number and improvement of education of the vernacular classes of the Medical College; both of which have been attained to a great extent. In it are brought to notice also three other questions of interest, on which it

is desirable that the Public should be informed more or less. The object of the tenth lecture was to advise the students of the Medical College, and to point out the relative value of English, Vernacular, and Oriental classical education, and the duty of the State to encourage them all, according to their different degrees of importance, in a complete scheme of National Education for India. It is the great discussion which is now going on, on this question of National Education, that lends value to the whole collection of lectures here brought together in one volume, as they were written after calm and deliberate consideration spread over a period of twenty years. Being mostly beyond the immediate sphere of professional action, their composition has cost me a good deal of labour and study, but if they should serve to throw any light upon the points now in dispute, I shall consider myself amply repaid for my trouble.

S. G. CHUCKERBUTTY, M.D.

July 25th, 1870.

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ERRATA.

Page 5, Line 2, from bottom, read "Mitter's" not "Mullick's"
" 6, " 2, omit "the" after "and"
" 11, " 5, of foot note, before "stand-posts," read "470" not "270"
" 16, " 23, read "distinctions" not distinction "
" 51, " 10, from bottom, read "receiving" not "relieving"
" " " 27, read "exhortation" not "exortation"
" 63, " 23, read "Agavo" not "Agava"
" 74, " 17, read "statistics" not "satisitics"
" 80, " 15, read "become" not "became"
" 115, " 7, read "notions" not "notion"
" 131, " 18, read "simular" not "similiar"
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LECTURE I.

SANITARY IMPROVEMENT OF CALCUTTA.

8th January 1852.

MR. PRESIDENT AND GENTLEMEN,—

IN introducing the subject of sanitary improvement, I wish you distinctly to understand that neither personal ambition, nor a vain desire for originality, is my actuating motive. Speaking chronologically, the topic is an old one. It has occupied the attention of men far abler and more competent than myself; but as their writings may have lain beyond the immediate field of observation with many of our countrymen, and as the fruit of their labours is scarcely visible in this metropolis, it is my intention to draw your attention this evening to some of the mighty results in the way of sanitary improvement which might be obtained by adopting the means employed by them. I feel this the more my duty, as from my travels in Europe I have had opportunities of appreciating the benefit of such measures; and if I should appear dogmatical in any part of the following discourse, I beg you *in limine* to pardon it as an effect of over-anxiety rather than of an overweening consciousness of my own power.

That as we are born so we must die, is, Gentlemen, a truism on which it is needless to dwell; but, although this is true with regard to the events of birth and death, is it of no importance to us to widen, if possible, the distance between them? Of great importance, most assuredly, whether we look at it in a secular or a religious point of view. Whether the gratification of sense, or the doing of God's work, is the end we aim at, we equally long to prolong our days, and the more so when we combine both objects, and feel our true position. The means, therefore, which conduce to health and longevity possess for us the greatest possible interest, both with regard to individuals and communities, and it is our bounden duty, when discovered, so to apply them as to secure these blessings.

Let us enquire now what are these means—the means, namely, of preserving our health? To sum up roughly, we might include them under the heads of food, drink, air, habits, clothing, and habitations: and for our present purpose this is a sufficient list, as it is not my wish to enter into particulars; nor is this desirable, since it is impossible to lay down rules, except for general guidance, which would meet the views of every one. The question of food,

c for instance, which forms the subject of dietetics, is viewed differently by different nations. There are some who think it enough to supply their daily wants with whatever articles come in their way ; some who take exceptions and proscribe meat of every description ; others who avoid only particular kinds of meat ; others who live chiefly on meat ; and others who imagine that to eat rice is tantamount to starvation. Amidst such conflicting opinions, how can we give particular directions as to what food should be used as the best, without offence to some party ? It is expedient, then, to shun altogether the discussion of such subjects, and consider only those which have a common interest. To illustrate this we will take water—a substance without which none can live. It has, hence, an universal interest, for anything that affects its condition must, more or less, affect the health of all persons using it. Consequently water is one of those commodities which ought not to be trusted to chance, which should be the first object of solicitude with every municipal board, the chosen guardians of the public, and which a wise and watchful community would always do well to look after themselves.

But we will resume the regular consideration of our subject, and examine first, what a question of sanitary improvement has to do with the articles of food. An enumeration of these articles, and their comparative powers of nutrition, properly fall under the province of the physiologist, and, though highly interesting, in our present discourse we have nought to do with them. It is their purity which is the aim of all sanitary measures to preserve ; and it is their impurity which is the object of every sanitary reform to remove. The question of sanitary improvement, then, is nothing more nor less than a consideration of the means or devices which preserve the purity, and guard against all impurities, of the substances in common use for supplying the waste, and maintaining the health of our bodies. Among the articles of food commonly subject to adulteration are milk, tea, coffee, salt, sugar, &c. Some of the adulterating materials, in a sanitary point of view, are harmless, others positively injurious, and all of them lessen or pervert the usual properties of the substances with which they are intermixed. We might easily fill a volume with a particular description of the nature of these adulterations, if we had not matters of still greater consequence which it is specially my wish to bring before this meeting. What I have already said, however, will suffice to shew how necessary it is for the Legislature to prevent this injurious practice, by enacting laws for the punishment of the authors of these impurifications which affect the public health, and how desirable that a vigilant Medical Police should be established for their detection.

There is another stage where these articles are liable to change,

which is generally not sufficiently attended to, but which may be productive of yet more direful effects. They may be of good quality when brought from the market, but they may become highly deleterious in their passage through the kitchen. I do not refer now to the dressing which they undergo from the addition of condiments which please the palate but cheat the stomach, till they lead to that fatty degeneration and enervation from protracted Dyspepsia, so well seen in the obesity of every corpulent Baboo: I mean simply the poison which is generated from the use of improper culinary utensils, and the poison which is transported with the impurities in the water.

The question might be asked, how is it likely that a poison will be generated in the process of cooking? I will answer how. An acid substance is cooked in a metallic vessel: the acid whether citric, acetic, mallic, oxalic, or tartaric, dissolves out a portion of the metallic oxide, with which it combines, and forms a salt of citrate, acetate, malate, oxalate, or tartrate of zinc, or copper, or lead; and this, taken into the stomach, acts as an irritant and poison. It is therefore of infinite importance to prevent these accidents, and the only way, it appears to me, in which it can be done, is by imposing heavy penalties upon those who undertake the duties of cooks without properly understanding their work.

We come next to drink. Under this head are included all those liquids which are used as beverages, and we will confine ourselves to a simple consideration of their different degrees of purity. We might devote here many pages to the use and abuse of alcoholic and malt liquors, but the doing so would be foreign to our object. All intoxicating liquors are more or less prejudicial to health when taken to excess or under particular circumstances; but sometimes we have recourse to them as medicines, and then is it that it is necessary for us to know their exact nature and strength. They are used either to remove bodily infirmities or to dissipate mental gloom, and the one or the other of these constructions is put upon his own motive by every one given to the habit of drinking. Whether this motive is or is not always sincere, no way concerns us to ascertain in our present inquiry; we have only to see that when it is so, it may not be frustrated by the trickery of wine-dealers; and that great deception exists in this respect no one can deny. We are all aware that the port, the sherry, the champagne, &c., in common use, are made stronger than they should be by the admixture of brandy, and that beer and porter are seasoned sometimes with an infusion of nux-vomica, one of the most virulent poisons in existence. The preservation of the integrity of these substances, by reason of such malpractices, is a thing of the highest moment, and to accomplish it, the punishment of every offender in this way, ought, as we have said when

To prove how water of bad quality affects the public health, we will quote here an instance given by M. Parent Du Chatelet, which demonstrates the amount of disease generated solely by the use of bad water. He says—"When I visited last year the prisons of Paris with my friend Villermé, who was interested in prisons generally, I was extremely surprised at the proportion of the sick in the Hospital of St. Lazarus, relatively to the whole population of the prisons. The prison uniting all the conditions necessary to health as regards its position, construction, the dress and food of the prisoners, who were constantly kept at work, how explain the much greater proportion of the sick to what we remark in the prisons of bad condition, and in which we found united all the apparent causes of unhealthiness? This, I must confess, has baffled all calculation, and has driven every one to say, that there must be a cause for the peculiarity, but that it could not be discovered. I do not despair to have hit upon that cause, and I believe it to be recognised in the nature of the water drunk by the prisoners. Having tasted it in the wooden reservoir behind the house, which was in bad order, and full of plants of the genus *conservæ*, I found it had a detestable and truly repulsive taste, a circumstance which does not appear to have been hitherto remarked. * * * Now the venerable Professor Pinel and his pupil Schwilgue have remarked for more than twenty years the influence which such water has upon those who use it, and they believe that certain affections evidently connected with locality cannot be attributed to any other cause, and particularly the disposition to chronic diarrhœa. It turns out upon examination that the greater part of the sick who fill the infirmary of the prison of St. Lazarus, are brought there for illnesses of the same identical nature. In the prison, they are obliged to have recourse to the water of the Seine to cook the vegetables and other food, an evident proof of the truth, or at least the probability, of all I have said."

Let us enquire now what care has been given to this question in this city, the metropolis of British India. It is, no doubt, a pleasing spectacle to behold the mighty and meandering Hooghly, and the numberless tanks forming sheets of water scattered far and wide over the whole of Calcutta, and to strangers it is a truly interesting sight; but however interesting as a sight, is this, even with the additional wells dug in every house, a sufficient provision for the purposes we have indicated—to repeat them—the culinary, washing, and drinking purposes? I answer—No. Rivers and tanks are mere depositories of water, but the water they contain is liable to a thousand contaminations. I need simply refer to every day occurrences to explain to you what these contaminations are. Go any of these days to Cussie Malliek's Ghaut, and you will see heaps of carcases that are continually being thrown into the river; or go

fill the water ; or to Jackson's Ghaut, where the ordure and muck of the whole town are poured forth in daily profusion.* It may be asked now, is water thus defiled fit for human use without previous purification? Are not bathers in the river continually coming in contact, nay, sometimes having their noses rubbed with floating filth, and putrified portions of the human dead? Is it not common to meet with the most offensive substances in the jugs which are filled in the river for drinking purposes? And can water such as this be used with impunity, even if it could without disgust? Do not the most loathsome forms of infection reside in the masses of putrefaction with which it is charged? The conclusion is a plain one from these clear premises. The most dangerous maladies are apt to arise from using water so foul. Add to this, the mud, the brackishness it assumes at times, and the indefinite number of dead animals† cast into it, and we shall have the *summum malum* consummated.

What can be said of the state of the tanks? Of these there are some properly enclosed, and kept in good order, such, for example, as the Lall Dighee, Jmuzreo Tallao, and a few others; the rest are left to the mercy of the public, and they are the receptacles for every description of nuisance imaginable. We have not to travel far to seek for instances of them; they exist in the immediate vicinity of this College, and it is easy for any person to satisfy himself of the correctness of my statements by taking a few hundred steps from this place. Ho will see then, their banks converted into conveniences, their ghauts covered with every species of abomination, their bottoms a bed of mud, and their surface overgrown with weeds and rank vegetation; and if this were all, we should yet have cause to congratulate ourselves. But the evil is of a deeper kind. These tanks injure us not only by the foulness of their water, but they likewise create for us a malarious atmosphere, and we might justly exclaim, their name is legion—the ills which arise therefrom.

It is indeed a most melancholy subject to contemplate the number of diseases which originate in this cause; a foul atmosphere is allowed by all medical authorities to be a grievous evil, and it is to this that most of the endemic maladies are due. But it is not only the occasion of these diseases, it aggravates also the virulence of those Providential visitations which pass under the name of epidemics, and afflict many countries at the same time. But more of this anon, when we come to the subject of habitations and drainage.

* This has since been prohibited. Corpses are now all thoroughly burnt in furnaces, and the night soil removed to the Salt Lake by the sewers.

† Dead animals are now removed to the Salt Lake.

With respect to wells, we have still less to speak in their favour. They are kept generally in a very dirty state; hence there would be an *a priori* objection to them; besides that, their water is hard and impregnated with percolations from the neighbouring privies. For this reason, it is not fit for cooking or drinking, though it might do for cleansing domestic utensils.

The above reflections are in a certain measure suggestive of the remedy applicable to the present case. In Europe it is the custom to supply water to every house by means of pipes; these are made of lead or cast-iron and lie underground. They lead out from basins or tanks, generally situated on high levels, and fed with water raised by pumps. After having had sufficient time to deposit here all impurities and to be filtered, the water is conveyed through the principal tubes which traverse sometimes a large tract before reaching the streets. Here they communicate with other and smaller tubes, which enter the houses on each side, and mount as high as the garret. So water can be had in each floor of every house through spouts from these tubes, and it is generally collected in a butt or cistern, from which it is pumped or baled out for all the various purposes. Off-shoots from these tubes also communicate with the water closets, &c., from which water is obtained by lifting a valve which checks its flow when it is dropped, while it prevents its reflux when once out. After serving these domestic uses, the waste water is carried off by drains which discharge themselves into the neighbouring sewers. Even in this case the water is apt to get foul from accumulations of mud in the basin or artificial tank from which the pipes immediately derive their water; and to obviate this, it is cleansed from time to time by stirring up its contents, and passing them, with the water, into the tubes from which they are got rid of, by opening certain plugs. This dirty water is thus emptied into the sewers, which finally carry it away without any cost of cartage as was formerly the fashion.

This plan, found so useful in Europe, would answer equally well for Calcutta, if we could establish a reservoir for water upon an artificial mound higher than any of the houses, and make tubes proceed from it to the different parts of the town. The pressure of the atmosphere, and the specific gravity of the fluid, would in that case combine to send on the water to any house and to any height below that of the mound.* But although, this is certainly a most excellent plan and perfectly feasible, I think we do not need it, since we could have a more practicable and less expensive substitute.

* This plan, further improved, is now in full operation in Calcutta, the water being brought from Pultah as shewn by the following extracts from the Report of our Water-works Engineer. —

"6. At the close of 1869, the Water-works were so far advanced to completion as to admit of a regular daily supply of water to the Town, and this supply has been maintained up to the present time. I shall briefly describe the works which have been constructed.

The tanks already existing in such abundance could be made available for many useful purposes. The water of some of them is exceedingly good, both for drinking and cooking, and with due care might be made to answer both of them. If the commission of nuisances on their banks, and the dirtying of their water by bathers, &c., were forbidden; if they were enclosed, and annually or biennially cleared of their mud, and no rank vegetation were permitted to cover them, I have no doubt their water could be preserved in a thoroughly drinkable state; and if a Police officer were placed at each ghaut, to bring up before the Magistrate for punishment any person violating these rules, and a few stripes administered for each crime, that would soon teach the public to observe better manners. In this way a great blessing could be conferred upon the whole population, and thousands of lives, now cut off by disease, saved from the very jaws of death.

These observations are intended to refer to the community at large; and they do not apply to those who have the means of collecting rain water for their whole year's consumption. With them I have nothing to do, nor should I deem it proper to have

PULTAH WORKS.

7. At the place where the water is taken from the Hooghly in the Pultah Reach of the River, about 2 miles above Barrackpore, the following works have been constructed:

1st.—An iron jetty with crane, and tramway to coal stores and filter beds, used for landing machinery, pipes, and stores, and for protecting the suction pipes through which the water is drawn from the river.

2nd.—An engine house with boiler house and coal stores, &c., complete, in which three 50 horse power engines and pumps for lifting the water from river are erected.

3rd.—Six settling tanks of brick work each 500 feet long by 250 feet broad, 7 feet deep at upper and 9 feet at lower end, with an available storage capacity of $4\frac{1}{2}$ million gallons of water, or nearly 26 million gallons for the entire lot.

4th.—Eight filter tanks each 200 feet long by 100 feet broad and from 5 feet 7 inches to 6 feet 1 inch deep. Each tank contains a filter bed consisting of a 30-inch layer of very fine Pultah sand at top, below which is a 6-inch layer of coarse sand from Mugra, supported on a bed of pebbles of five sizes, varying from fine gravel above, to pebbles, size of walnuts, or hen eggs, below. The total thickness of filter bed including pebbles, varies from 3 feet 10 inches to 4 feet 4 inches. Each filter tank is capable of yielding 1 million gallons of filtered water in 24 hours; equal to 8 million gallons from the entire number.

5th.—A covered well in which the filtered water is received, and from thence passed into the large main pipe which conveys it to Tallah reservoir north of Calcutta, the supply being regulated by three large sluice cocks fixed in well.

6th.—A small house containing two iron tanks, with the necessary pipe-work and cocks for washing sand for the filter beds.

In connection with foregoing works there is an underground net-work of iron pipes and sluice cocks, by which the river supply to the settling tanks, from thence to filter tanks, and ultimately to the covered well is regulated; and of earthenware pipe drains and culverts, by which the drainage of the tanks can be readily effected for cleansing or repairs.

These works, including the house and out-offices purchased by the Justices, stand upon an area of nearly 100 acres of land enclosed on two sides by the river, and on the other two by a new public road constructed by the Justices in lieu of an old one, which ran through the works. A boundary wall along this road is needed to protect the works, and also a short accommodation road to the engine house.

Thus we could have water for drinking, cooking, bathing, washing, and watering the streets, of just the kind wanted for each purpose, with very little additional expense, but an immense and inestimable benefit to public health; and why this subject has been so shamefully neglected, we must leave the proper authorities to solve.

The next topic which will engage our attention, is the state of the air. This, like water, is one of those things indispensable to life, and much depends on its condition. Its purity may be affected in three different ways; viz.—1st—by the general circumstances of the country; 2nd—by the situation of the place, 3d—by local causes. The circumstances which affect the air of a country generally arise from its geographical position with respect to the equator, from its proximity or distance from the sea, its soil, and the nature of its surface. To these is occasionally added a fifth unknown agent, which we are in the habit of calling the epidemic condition of the atmosphere. With these in the discussion of a sanitary question we have no concern, excepting so far as their evil effects may be enhanced by local causes; for we cannot mend general causes, but we can remove local influences. The same might be said as to the situation of a town; it is the business of its founder to place it in the healthiest and most convenient spot; and for our part we deserve neither blame nor credit for what has been done by others. If it lie in a valley, we cannot raise it on a hill; if it be on a hill, we cannot lower it to a valley, without changing at the same time its site. This sort of sanitary improvement, therefore, must be left for those who have the peculiar honour of being founders of cities. What we have proposed to ourselves is merely the task of getting rid of removable evils, in which we have

2nd. { 15 Miles and 348 yards of trunk mains,
86 Miles and 180 yards of service pipes.

3rd. { 25 Sluice cocks on trunk mains,
404 Ditto on service pipes.

4th.—270 Stand-posts, or water pillars, spaced within 300 yards intervals through all the principal streets and lanes of the Town—a few more were subsequently fixed.

5th.—12 Bourdon's Pressure Gages placed at five principal points in the Town to register the pressure maintained in the mains.

Besides the piping above mentioned about 1½ mile of 12 and 6-inch piping, previously laid by the Janitors in connection with the Nimtollah Pumping Station, were incorporated with the new system of pipe-work.

11. 306 Streets and lanes throughout the Town, including all the principal ones, have been piped—in the great majority of cases from end to end—but in a few lanes, partially as far as stand-posts. The total number of thoroughfares of every description as given in the Census Report of 1866, is 438; aggregating 108 miles in length. Of the total number of streets and lanes piped, 165 are in the Northern, and 141 in the Southern Division of the Town; of the stand-posts fixed, 257 are in the Northern, and 213 in the Southern Division.

12. Thirty Tanks—viz, 22 Public, and 8 Private, with privilege of access secured to the Public, have been connected with the Town piping, and are now receiving a supply from the Water Works; of these tanks twelve are in the Northern, and eighteen in the Southern Division.

strength might sometimes be pointed out ; for here again one thing is brought out at the expense of the other, the mind being generally utterly neglected. That mental culture, properly combined with physical education, would produce in this country results as great as in any part of Europe, I think, I could easily prove ; and some of my native friends present at this meeting would suffice to bear me out on this point ; and they, I have no doubt, deplore with myself that so little attention is paid to an object so all important in the education of our youth. A truth so obvious does not require to be descanted on at greater length. Let active games and sports be introduced into every school, and we shall soon see a change for the better. As the mind improves, the body will become developed, and judgment and understanding grow equally vigorous and mature. There will be then none of that slavish timidity, approaching to cowardice, which is the natural result of a consciousness of one's own physical weakness ; on the contrary, a healthy tone will prevail, indicating a nobleness of disposition, and a freedom of thought not to be found in those who are constantly haunted by fears.

With regard to cases of diseased habits, these are too common not to be noticed. Every fat Zemindar whose chief pleasure consists in pampering himself, leaving the conduct of his affairs in the hands of others, is a true picture of idleness, who feels it too great a trouble even to eat his meals. Each of those philosophers, who are constantly poring over books and manuscripts, neglecting even the most ordinary kinds of exercise, is a moving mass of consumption, whose life is not worth a wager, and whose faculties are properly distrusted by worldly men, on account of their being in a state of morbid excitement. In such men, bodily exercise, duly combined with mental culture, becomes really a most valuable sanitary measure ; and I would advise the mere *savant*, as well as the obese, to weigh this matter carefully in their minds that they may not discover their error when it is too late, and that they might be of some real use in their generation. We have had enough of nervous wisdom to be duped into a belief of its goodness ; and its philosophy has always in the long run given way to common sense ; and let us hope that those who are ambitious of instructing others would no longer neglect to establish their own equilibrium in the first place.

We might say something upon habits of other descriptions more especially on the habit of cleanliness, which has a great influence on health ; but as that question is practically understood by every person in this climate, among the Hindus, perhaps, more than among any other people, it would be superfluous, beyond indicating it, to dwell further on this point at this place.

habits, deserves a careful consideration. In the discussion of this question we have no desire to meddle with the cosmetic character of the dress; nor is a meeting of mere gentlemen competent to decide this point, since ladies have a greater interest in it than they. We will enter at once, for this reason, on dress as a protecting medium, I mean, a cover to guard the skin against injurious impressions from the ever-changing external influences, such, for instance, as cold, heat, contagion, malaria, poisons, &c. It is true that in the pristine ages men wore very little clothing; it is true that there are people still who live in a state of almost complete nudity; but it is no less true, if medical testimony can be trusted, that, at least in our days, the duration of life among such unhappy races falls considerably short of what it is in countries where proper clothing is in use. The physiological object of clothing, then, is a provision against injurious operation on the skin from outward causes, and it is best answered by such apparel as keep off their effects. In this regard must be had to the nature of the climate, and to the season of the year; but whether in the tropics or in the frigid zones, whether in summer or in winter, if dress has any practical value, it should consist of such garments as would more or less cover the entire person, or else it is a mere foppery and useless burden. I am quite aware that an objection might be offered to this doctrine from the fact that, in certain occupations, such a dress would be incommodious, and I am willing to grant it; but I grant it only so far as regards the hours during which men are actively engaged; for as soon as their work is over, their frame is in an exhausted state, when atmospheric influences would readily take effect on them; and it is at such times that they require, more even than other persons, to be properly clothed. In the habitually weak, deficient clothing, I have little doubt, is one of the principal degenerating causes; and we shall presently point out instances of such.

The object of this paper being to throw out certain hints and suggestions concerning the sanitary reforms called for in this town, it behoves us to examine narrowly the clothing of its inhabitants. In the prosecution of this inquiry we might arrange the articles of dress conveniently under the following heads, or costumes: viz. 1st. The Brahminical; 2nd. The Mahomedan; 3rd. The Chinese; 4th. The European. These give us the principal types to be seen in this city; it is immaterial to us to notice the innumerable minor modifications which have all originally sprung from the one or the other of these costumes. Of all these various forms, the Brahminical is the most insufficient, and its degenerating effect is well-marked in the puny bodies and undeveloped limbs of the nation that wears it. It consists, as applied to men, of a sheet, called a *dhotie*, wrapped round the waist, and of another, called a *chudder*, wrapped round the upper party of the body; applied

to women, it consists of a single sheet, called a *sharee*, so put on as to envelope the whole person, the face inclusive, where it forms a long pendulous veil. No gloves and no stockings enter into the dress of either sex ; no shoes are used by women ; and slippers and sandals are worn by men only of a certain class, whose head-dress is a cap.

The Mahomedan dress for men is a loose drawer, called *pay-jammah*, and a long-tailed, flowing, disproportionately large gown, called a *chupkan* ; for women, a drawer, a *banian*, and a *chudder*. The feet and hands are bare also here, as in the last case ; but they wear slippers more commonly than the Hindus, both men and women, and very seldom resort to sandals. The turban is their usual dress for the head.

Deducting the *chudder* and the turban, the only difference between the last and the Chinese dress lies in the upper garment, which in them has the form of a large shirt.

The European is the most complete of all these different costumes. It consists of certain inner garments, called drawers, shirts, and stockings, fitted to the person ; and over these, waistcoats, coats, trousers, and shoes, or boots. It provides likewise gloves for the hands, a cloth for the neck, and a hat or bonnet for the head, to be worn only out of doors, and taken off as soon as one enters a house. It is no wonder then that they are less liable to disease than the wretchedly-clotbed Hindu, and that their lives fetch a much higher value with all Insurance Companies than his.

But, although all this is true in respect of national peculiarities, are there no exceptional cases ? Many, I rejoice, to confess ; and that for a good reason, because some of these costumes are mere relics of barbarous times and crude notions of decency, when the women were treated like slaves, and the greatest sensuality was the only pleasure for the men. There is a growing tendency in our age to value every thing for its use ; and this utilitarianism holds good whether we turn to dress or to works of art. Whatever is useless is condemned as superfluous ; whatever is clumsy and uncomfortable marks a want of taste ; and whatever is both useless and uncomfortable, but showy, a silly and arrogant vanity : and under the latter class we might place some of the modern innovations into the Brahminical costume, such as the useless turban, the Mahomedan *chupkan*, and the burthensome shawl.

But it is only when the dress is either uncomfortable or insufficient that it properly becomes a question of sanitary importance. A question which has for its object the preservation of health, has little to do with fashion or nationalities. In truth, fashion and nationalities in dress, are empty words, which, it were better, were expunged from all dictionaries.

The chief purport of dress being the protection of the body against atmospheric influences, it is answered best by that apparel

which forms for it a complete investment, without, at the same time, interfering with its functions, or confining its movements. Mark now how very short of this aim falls the dress worn by the native population of this town; and then it is not remarkable if the greatest mortality prevail among them. The fullest dress of the lower orders consists of a dhootie and chudder, and the latter they throw off as soon as they are at home; many of them do not use it at all: the fullest dress of the upper classes consists of a payjainmah, a chupkan, a turban and a shawl or chudder, every article of which they cast off the moment they get home, where their dress is a simple dhootie, unless it is cold, leaving the upper half of their person thoroughly uncovered. Who will wonder after this, if both these classes suffer more than Europeans from every prevailing malady? The great mortality among the native population should make one ask himself as to its reason; and he will find it in their insufficient clothing, innutritious diet, and ill-constructed and ill-kept habitations. For my own part I would care little whether the dress they wore was called European or Asiatic, so long as it was sensible, and answered the purposes of cover, neatness and decency; but in the present state of things there is, properly speaking, no unmixt Hindu costume in this city, unless we turn to the women, and a more miserable and indecent costume than they use could scarcely be found. Without reference to its incompatibleness with female liberty, such a *habit*, to say the least, is ruinous to health; and I should rejoice to see that this truth was practically felt and acknowledged by the persons it concerns. As to the particular fashion which should be followed, I must leave the enthusiasts for national distinction to fight it out; in my humble opinion, I think it would be a positive advantage if we could get rid of some at least of these so-called distinctions, which peculiarly characterize our countrymen; and then I have great hopes we could live and dress like civilised men. But the fact I am most anxious to enforce is the necessity for a sufficiency of clothing, and the lamentable defect which obtains here in this respect. It would indeed be a great boon if sanitary considerations should dispose our countrymen to attempt some reform in their dress, which should render it compulsory for every man to appear, at all events in public, sufficiently clothed, and, at home, so as not to be a barrier to the emancipation of the fair sex.

The next division of our discourse falls on the state of the habitations, or more properly, habitable places. This is a subject of the widest range, for it includes not merely houses, but also the drainage of the place where they stand, and the roads leading to and from them. The great importance of it will be made manifest by a remarkable passage which occurs in the small-pox Report by Dr. D. Stewart in 1841: He observes "It is foreign

to my present object to describe minutely the well-known evil effects on public health produced throughout the whole native town, and to a frightful extent in certain Thannahs, by the original defects and errors in the plan of the city, the distortion, the malposition, and misdirection of its principal thoroughfares, the narrowness and confinement, and consequent bad ventilation of its lanes and gullies, the bad construction and faulty arrangement of its dwelling-houses, the smallness of the sleeping apartments, the perpetual dirty and damp state of the courtyards, the crowded condition of the inmates, the disgusting stench from the public cesses and privies, the stagnation of tanks, drains, and sewers, the scantiness and badness of the water supplied for domestic uses, &c. &c. All these matters have been often pointed out and lamented, talked of for a time, forgotten, and re-discussed on the recurrence of some sweeping pestilence, to be again consigned to temporary oblivion. The attempt to remedy them seems to have been abandoned as too arduous and almost hopeless. The origin of all these evils, their number and extent, with descriptions of their actual effects, and plans for their removal or amelioration, have from time immemorial, engaged the consideration of individuals and of Governments; and are they not fully chronicled, in faithful and filthy detail, in the recently printed report of the Municipal Committee, and in the ample pages of its voluminous appendix? Sufficient information on the subject will be found in the able exposition of their results on civic health, contained in Mr. J. R. Martin's "Topographical Memoir of Calcutta." His predictions, founded on close and long observation of the devastating mortality caused amid the dense population of Bengal "rice eaters," by the combination of such natural and artificial elements of disease as the climate and town of Calcutta present, have been abundantly verified during the late epidemic, and have made it sufficiently easy to point out those districts and thannahs, where pestilence would surely be most rife, and death's harvest greatest."

For convenience's sake we will consider the subject of habitations under the following heads: viz.—1st, Dwellings; 2nd, Drainage; 3rd, Roads.

With regard to dwellings or dwelling-houses, they are places either of residence or of work, where men have to breathe a confined atmosphere; and as the amount of purification which the blood undergoes, depends on the quantity of oxygen in the air inhaled, and as this air comes in direct contact with an extensive, highly vascular and sensitive surface, the degree of its purity becomes a question of great interest. The other conditions of the healthy discharge of the different functions of life depending on the state of the dwelling, are the amount of light it admits,

the degree of dryness in which it is kept, and the extent to which it is free from the influence of malaria. To speak more briefly, the tests whereby we judge of the salubrity of a dwelling, are the perfection to which its ventilation, illumination, dryness, and elevation, are carried; and a proper condition of these is, therefore, the essential quality of a good house.

The ordinary means of preserving the atmosphere of a house pure, is a constant change of its air or ventilation. This is usually effected by windows and doors, which can be opened or shut as we please, and which are likewise employed for the admission of light; chimneys with stoves or fire-places, are a good addition to these means, for they drive up a column of heated air, in supplying which, currents are created through the rooms; and they would suffice to keep up a due state of ventilation when the weather outside is inclement, and the windows require to be closed. Thus whatever foul air is generated is artificially forced to make room for air purer and heavier than itself.

Windows, doors, chimneys, stoves and fire-places, which help so effectually in circulating the air, are also the best measures for producing a state of dryness. Wherever there are currents in the air there must, of necessity, be a constant change of particles, and as these particles in their passage absorb all moisture, they carry it off as fast as it is created.

The injurious operation of malarious poisons is best obviated by observing a sufficient degree of elevation. It is now a well-known fact that malaria does not ascend beyond a certain height; and of the knowledge of this fact advantage is taken by all scientific architects in building houses on high altitudes, natural or artificial. Besides the purposes of shelter, then, the four grand objects to be kept in sight in the construction of a house are, its ventilation, illumination, dryness, and sufficiency of height: and how much depends on this we will prove by quoting a passage from the learned Parent Du Chatelet, who notices in the following terms the diminution in the mortality of the Hôtel Dieu from better ventilation:—

“The mortality has diminished in the Hôtel Dieu in remarkable proportions. Without saying anything of the enlargement of the windows, of warm clothing, of a better system of heating the apartments, are we to count for nothing the destruction of all the high houses which surrounded the Hôtel Dieu on every side? In our opinion the pure and dry air which circulates now in every part, the sun which penetrates there, the stoves which have been erected, have as much contributed to its healthiness as the suppression of the amphitheatres of anatomy which were in its neighbourhood.”

We will see now how far these important points are attended

to in this town. The pompous name of *the City of Palaces* would lead one *a fortiori* to expect Calcutta to be full of fine houses; and *a fortiori* reasoning, I deny not, is true in this instance to a certain extent. But this applies merely to the English quarters, while the native part is occupied by huts and houses generally an better than pig-sties. The few exceptional cases which occur here and there, are comparatively of modern date, and the result of accident rather than of choice; for how can we believe that the merely rich would make houses after western fashion from a sincere conviction of their superiority for the purposes of health, while the educated rich are content to live in houses looking like shambles and prisons? When we descend to the working and poorer classes, the spectacle is still more appalling to see human beings dwelling in filthy hovels not unlike cowsheds. Then, think of the defective ventilation, gloominess, dampness, and lowness of these so-called houses, and add to this the manifold abominations with which they are usually surrounded, and you will have the most vivid picture I have seen yet described of abject wretchedness. These residences are generally indifferently built, on low levels and damp foundations, without windows, without chimneys; their walls frequently are so rotten and perforated, that reptiles may creep in through them without the knowledge of their inmates; and their roofs so fragile or full of rents, as to let in the rain which trickles down their ceilings on the persons of their miserable tenants. Rat-holes and nests often abound in their interior, and filth and mud bespread their compound. Here, then, are damp, foul air, and malaria, all in conjoint operation, and if their effect could be yet more aggravated, that is done by the addition of open necessaries, sculleries, and drains, excluding the floating dust from the ill-conditioned roads as a minor evil.

Thus we see that, though the European residents, and a few of the natives, are tolerably well-lodged, the majority of our fellow-citizens dwell in houses unfit for human residence. Hence it becomes to us a paramount duty to devise some way of bettering their condition; and I will now lay before this meeting for its consideration what I am of opinion might be adopted with benefit in this respect.

It is generally admitted:—

- 1.—That huts require to be oftener rebuilt than brick-houses.
- 2.—That brick-houses are less liable to conflagration than huts.
- 3.—That brick floors are less damp than earthen floors.
- 4.—That it is more convenient to have windows in brick walls than in walls made of sticks and mats.
- 5.—That there is less danger in having chimneys in brick-houses than in huts.

6.—And, lastly, that brick-houses can be made to have several floors, whereas huts have only one floor.

The superiority of brick-houses, then, to huts is clear as daylight, in every essential particular, even as to the question of economy. It is true that the building of a brick-house costs more than that of a hut; but then the former, once built, will last longer than the lifetime of an individual; while the latter will decay and crumble in a few years, even if it should escape destruction by fire. Consider now the loss that a man is liable to suffer, from the burning down of his house, in goods and chattels, a thing of common occurrence in this city as we all know; and then put together the probable risks, and the expenses of rebuilding a hut, during a period of 20 or 30 years; and contrast these with the outlay of constructing a brick-house which shall last that length of time, with its attendant comfort and salubrity; and you will find the balance will fall greatly in favour of the latter.

Having proved that brick-houses are not only the most eligible, but also the most economical in the long run, both to landlords and tenants, we have next to show what kind of houses will best answer our end. The present style of native houses will not sufficiently serve it; the present style of English houses will not suit the incomes of the humbler classes; a medium must be struck between them to combine comfort with economy; and this will be best done by imitating to a certain extent the plan of house-building followed in Europe. That plan consists in constructing terraces, or continuous rows of houses, instead of single lodges, conveniently raised in their foundations, and sufficiently ventilated by an adequate number of windows, chimneys, and fire-places. I will allow that we do not require fire-places in this country so much as in Europe, but I maintain that at times they are not only convenient, but absolutely necessary to health, more especially to parturient females and persons on the sick-bed. If this plan were adopted, for Hindus, the lower floor might be kept as a sort of outer compound for the reception of strangers, and the upper floors might be used for bed-rooms and other purposes. The kitchen, in that case, might be made at the back of the house, to which access could be had by a back stair-case, and the pantries and bathing-rooms placed over it, if required. Now if the whole terrace were to be surrounded by a tolerably high wall, except in front where the doors should open, and the space thus enclosed divided into smaller compounds, by means of secondary walls proceeding from the main-wall behind to the back of each house, there could be room made for stabling or any other out-offices, the principal entrance to which should be through gates in the hind wall. A

small passage from the lower floor to this compound, and the kitchen for servants, to pass in and out, would then complete the whole arrangements, when the back entrance might be kept shut, except for ingress and egress of one's own horses and carriage, and the front door watched by a durwan, or generally kept closed, and opened only when rapped at with a knocker placed on it for this purpose. In this arrangement wells could be dug, and a nursery garden made, if wished, in the back compound, water might be supplied, if required, through pipes as before alluded to, and the filth and soil of the house got rid of by means of conduits or drains leading into subterranean sewers. Rows of such terraces might be placed on either side of the street, with their backs facing the backs of other rows in other streets, leaving between them an alley for horses and carriages.

Now houses of this kind might be easily made to suit both the rich and the poor by certain additions or subtractions according to their respective circumstances, and this would be a boon not alone in a sanitary point of view, but it would tend likewise ultimately to a great reduction of the present exorbitant rates of house-rent, so ruinous to tenants; and health, comfort, economy, and prolonged life, would be a few of the blessings of this improvement.

We have to discuss now the subject of drainage,—a topic the vast importance of which cannot well be exaggerated. As water imparts its quality to every article of food and drink, so drainage has its share in the influence of the air we breathe; and this holds good both in regard of the circumscribed atmospheres of houses, and the more extended atmospheres of the streets. The object of drainage being the removal of all putrefactive and decomposable substances, and the prevention of puddles and stagnant pools from rain and other sources, the degree of perfection to which it attains is a correct index of the healthiness or unhealthiness of a place; because if the state of drainage be good, there will be little fear of the air getting infected from animal or vegetable effluvia, or of the place being damp from watery accumulation; but if it is bad, contagion and malaria will abound in the air, which will thus become highly obnoxious to health. Malaria and endemia are nothing more nor less than air rendered foul in this way, and no remedy is so potent in their extirpation as efficient drainage. It takes away much of the horrors of even epidemic diseases, and certainly confines the ravages of those which originate in putrefactive changes.

Let us hear what the General Board of Health say on this subject in their report of 1848-49, on epidemic cholera. They remark:—

“The object of sufficient drainage work is two-fold; first, the

removal of decomposing matter in suspension in water ; and secondly, the removal of surplus moisture. But ample experience has proved that drainage, empirically conducted, in the hands of those who have given no special attention to the subject, increases the evil intended to be obviated, by extending the noxious evaporating surface, or by shifting the decomposing matter from one place to another. The superintending inspectors, in their reports on the various towns they have examined, concur in stating that the *force of fever and of cholera in general falls on those localities which are without drainage, or in which the drainage that has been attempted has been so unskilfully performed, as to have increased the evil.* Dr. Sutherland and Dr. Clark give a remarkable example of this, in their reports on Bristol. Dr. Sutherland, in describing the condition of certain courts covering a piece of land, fifty-six yards in length, by thirty-seven yards in breadth, and containing sixty-six dwellings, in which there occurred forty-four deaths from cholera, says :—

“A more deplorable event, perhaps, never occurred than these tables describe. A very slight consideration of the whole circumstances is, in my opinion, sufficient to prove that this great sacrifice of human life was occasioned by ignorance or negligence, as flagrant as any which from time to time, gives rise to railway or other accidents. A glance at the place will show that something like sanitary improvement had actually been contemplated ; and no doubt, it was believed that the object would be attained, if only a sufficient number of drains and privies were constructed. Like every other step in a false direction, the so-called improvements increased the evils they were intended to mitigate, and with the other circumstances above detailed, caused the untimely death of many innocent persons.”

We will now turn to the manner in which this object has been provided for in Calcutta. Carrying ourselves to the European quarters, we discover there certain gutters along each side of the streets for allowing the water which falls from the clouds to run out, the removal of filth and night-soil being left to cartage and daily manual labour. Carrying ourselves to the native quarters, we find open drains, or rather ditches, in all parts of the town, stinking horribly, and full of a black mud of semi-fluid consistence, which consists in part of decomposing organic matter of every description, and in part of stagnant water, exposed alike to the sun and wind. The passage over them to the neighbouring houses is effected by small arched bridges not more than two or three feet in breadth each, and shewing publicly the abominable contents of the ditches, to clear which, it seems, little or no pains are taken ; and they give forth enough of bad

air to poison the whole population. How men manage to live at all in such an atmosphere is rather a matter of surprise, than that it should become the chosen den of cholera, small-pox, dysentery, diarrhoea, consumption and fevers.

More loathsome even than bad drains, and a consequence of their inefficiency, are the privies and cesses, two or more of which are to be found in every native house as places for alvine evacuations, and which daily regale its inmates with their highly odoriferous and foetid emanations, more particularly during the hot weather. These repositories of human dung are emptied sometimes every day, sometimes once a week, sometimes once a month, and sometimes never.

Both these causes of evil, viz, stagnant ditches and neglected privies, could be easily mended by the adoption of an efficient system of drainage; and I purpose to bring forward here the plan which, it appears to me, would best answer this object.

In Europe, the following is the mode of drainage in general use. First there is a main sewer or drain, which traverses the whole length of the town from one end to the other; this gives off branches in the lines of the chief thoroughfares, which are called the second class or district sewers; from them proceed a third and yet smaller set to the different streets and lanes, which receives the drains from the houses on either side, as well as communicates with the gutters by openings called gully-holes. Off-shoots join these too, from the numerous alleys, courts, closes, and wynds. The parent trunk or main sewer, with which all these ultimately connect themselves, runs out into a neighbouring river, or into the sea, or into a waste (where its contents are collected for the purposes of manure), with a slow current, which it derives from sewers of smaller size, carrying down all the surplus, and waste water, slop, filth, soil, and decomposing substances, and at times having its volume greatly augmented, and its velocity considerably increased by heavy showers of rain. The house drainage is effected by the small drains, or conduits, which go from each house to join the street sewers, conveying to them all the water and filth. The street surface cleansing or drainage, is conducted by the gutters, which deliver what they receive by the gully-holes into the sewers. The sewers lie all under ground, immediately below the centre of the streets through which they have to pass, which are arched and paved, and slope towards the sides. They are all so covered as to preclude every possibility of any gas escaping out of them. The gutters are open, and the gully-holes, defended by iron gratings, through the meshes of which the surface cleansing and the rain-water have to pass down. The drains from the houses are either exposed or covered. With regard to construction, the sewers are built of mason-work;

the smallest of them have a round channel; the medium-sized ones, channels of an oval shape; and the largest, egg-shaped. Their floor, as well as their top, has each the form of a segment, and their sides between these segments, are either sloping or vertical, the former being the one most favourable to drainage. (Until lately most of the sewers had flat bottoms; but it was found that the current through them was much slower than through those whose bottoms formed a segment.) Their top is arched likewise, in order to give strength to their roofs, which might otherwise sink from the surface load. The sides of the sewers have certain openings by which they can be regularly inspected; formerly there were man-holes instead of these, which were used for sending down men into the sewer itself to see how it was working. Whenever any of the sewers is out of order it is thoroughly exposed, put to rights, and then covered up again. In certain places flushing-gates are employed to collect a certain amount of drainage, which, when they are thrown open, rushes forth with such force as to prevent any blockage: and that all these various purposes may be duly attended to, a number of engineers and workmen are constantly engaged.

In some countries, the main sewer above alluded to, passes in the shape of a canal thoroughly exposed, through the middle of the town, receiving branches, or district sewers, from all quarters, bringing with them the whole of the drainage. The secondary arrangements in this instance are precisely the same as in the last. This is the method commonly followed in Holland, *eg.* Leyden, Amsterdam, &c., where the country is level, and no fall can be obtained. It has, however, one obvious disadvantage, in allowing the whole drainage to pass through the town perfectly exposed, and giving out foul air.

Both these plans are each excellent in its way, although for my part, I prefer the first; and either of them might do for Calcutta. Whichever should be employed, the main sewer, or canal, might spring from the Cossipore side, and discharge itself at, or below, Garden Reach. A precaution would be required, then, at the discharging mouth. Here there must be placed a valvular, or flood-gate, which should open only from the pressure of the drainage above it, but which should shut against all backward currents from the river during flood-tides. If this plan be adopted, there will be the house and street drainage, which during the rainy season is very considerable, to feed the drains and sewers; and, in addition to this, the waste-water from the aqueducts and reservoirs, which would be alone enough to flush them every day.

This is all I have to say with respect to drainage at present. I am aware something of the kind was once before proposed to

Government; but why it has not been carried out is more than I can guess.*

This brings us to the last topic we promised to examine, i.e. the state of the roads, by which I mean, streets, lanes, &c., as well as the roads properly so called.

The proper use of a road consists in its fitness as a convenient passage for men, horses, waggons, and carriages. Under ordinary circumstances the attainment and preservation of this state, require artificial aid, and that this aid might be afforded is one of the chief objects for which Municipal Commissioners are appointed. But in order to the due performance of this duty, it is imperative that the Commissioners themselves should be competent to distinguish a good road from a bad road; and this requires knowledge which, I fear, is not always the recommendation for which they are elected.†

A good road is that the surface of which is even, without being slippery; which is not distorted; which is raised in the middle, and slopes towards the sides, so as to make all water falling on it run into the gutters; which is free from dust, and clean; which is properly lit at night; and lastly, which has separate paths for foot passengers, and for vehicles, both broad enough to admit of a forward and a backward stream without collision. Let us enquire now how far these objects are kept in view in the road line of Calcutta. The metalled roads issuing from the Fort are here the best of their class. They are even, sloping towards the sides, constantly repaired, and daily watered throughout certain seasons to

* Since the above was written a scientific drainage scheme (Mr. Clarke's) has been adopted, and partially executed. In principle it is the same as described above as being common in England. Its main features are that it consists of *works within the town and works beyond it.*

The town portion consists of a large sewer along the Circular road, which receives in its course, several mains along the principal thoroughfares, connected with sewers of different sizes and house-drains. The portion outside the town consists of an out-fall sewer joining the Circular road sewer about its middle with the permanent pumping station at Palmer's Bridge, a high level sewer into which the sewage is discharged at the pumping station, and a channel in the Salt-water Lake where the high level sewer terminates.

The following extract from the Engineer's Report for 1869 will shew the progress made in the execution of this scheme.—

"Annexed will be found details of all the works completed in connection with the new system of sewers from their first beginning to the end of the past year.

"From this it will be observed that, exclusive of the outfall works, they comprise 85,144 feet of brick sewer, and 53,570 of pipe sewer, making a total of 138,714 feet, equal to 26½ miles of sewers, all of which are available for drainage of the localities in which constructed. The outfall works themselves include the high level sewer 8,900 feet, the outfall sewer 3,467 feet, and the excavation of the centre channel of the Salt Water Lake 8,700 feet, being a total of 21,067 lineal feet."

In the Southern Division of the Town the completed portion of the new system of sewers has been at work now for some time, and found to answer well.

† Two of the Commissioners were at this time elected by the votes of the rate-payers, and two appointed by Government. One of the latter, the Chief Magistrate of Calcutta, was the Chairman of the Board.

prevent their being broken or dusty. But they have neither sewers, gutters, nor drains, and the lamps which light them at night are just sufficient to keep one on their track.* Next in rank come the streets in the European town, which are tolerably regular, to a certain extent looked after, and many of them watered. But even these at times get so broken, and full of holes and puddles, or rough from the newly laid metal, that they are almost impassable, and one runs a great risk of breaking his neck in going along them. Last, and certainly the worst, with three or four exceptions, through which Europeans and troops have occasionally to pass, are the streets in the native town, none of which are kept in a proper state of repair, none of which are watered, all of which are badly arranged, all of which have exposed drains and disgusting privies on their sides, all of which are so inconveniently narrow as to allow with difficulty two carriages to pass abreast, all of which are badly lit, all of which are more or less overhung by numberless balconies, from which every species of nuisance and slop is dropt on them, and even sometimes on the passers by, and all of which often become a place of convenience for persons to ease themselves.†

This is really a state of things pregnant with evil; and to remedy it our Municipal Commissioners seem hitherto to have done little or nothing. In England every street is divided into three parts; there is a path in the centre for the passage of vehicles, broad enough to permit two or more of them to pass each other with ease; and a raised path on either side of this for foot-passengers. The central path, or carriage way, is either macadamized, i.e. paved with short thick stones called flags; or it has a wooden pavement; in both cases it is arched or convex, sloping towards the sides, in order to be sufficiently strong to bear the load on its surface, without sinking into the sewers below, and to afford a ready flow for the water. The side or foot-paths are paved with broad flat stones or tiles, to make them smooth, and so wide, as to allow of a backward and a forward current on each. Between these and the central part lie the gutters, beyond them the railings of houses or rather terraces, and beneath them, water-pipes and gas-pipes. These gas-pipes feed lamps placed on posts, 8 or 10 feet high, immediately at the edge of the pavement for the foot-path, alternating with each other on the two sides, and lighting the streets; they send also branch-pipes to such houses as use gas-light, such as shops, taverns, &c. The gas, of course, is prepared artificially, collected in a gasometer, and distributed through pipes precisely in the same way as water.

* The maidan has now both drains and gas lamps

† The nuisances here described are now greatly diminished. Roads much improved, and the town lit with gas.

These are just the improvements essential to a good road, and I can do no better than recommend them to your careful consideration as a sanitary measure. The aqueducts and reservoirs so often referred to would give us, besides, a great advantage, inasmuch as every street would be watered merely for the trouble of sprinkling it with the water contained in them.*

This conducts me, too, to the end of my subject. I should like to have recapitulated the principal topics we have discussed, but our time will not permit it; and, therefore, I must now conclude at once (thanking you for the patience and good temper with which you have listened to this discourse).

ADDENDUM.

The other improvements made are the construction of some new squares and streets, for freer ventilation; the construction of a Municipal railway for the removal of the town sweepings to the Salt Lake, the construction of good public slaughter-houses and cattle-sheds out of town, and the closing of the private ones in the town; the closing of intramural burial grounds; the removal of the skinning ghaut; the opening of a large pauper and four lock hospitals; the improvement of the river bank and construction of jetties along it; the better disposal of dead paupers at the public expense; and bazar inspections. As was anticipated from all these improvements, the health of the town has greatly improved of late years, and its mortality perceptibly decreased, while commerce has also been facilitated.

* This object is provided for in the new water supply system by a number of stand-posts or water pillars being erected in each Street. (See foot note, p. 11.)

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LECTURE II.

PHYSICAL TRAINING AS AN ESSENTIAL REQUISITE OF NATIVE EDUCATION.

March 9th, 1854.

MR. PRESIDENT AND GENTLEMEN,—

THE subject which I propose to bring before you in this discourse, is the Constitution of Man, viewed in regard of his physical and intellectual developments, with a brief sketch of historical facts so far as they aid us in deducing sound, practical rules for our own guidance and well-being, as well as for the management of those whom inexperience, youthfulness, or some other accident, may place under our care. My reasons for entering on this task are precisely the same which would have occurred to any other person interested in the welfare of his species; and, although there are here many gentlemen who would have done it greater justice than I shall, I feel, nevertheless, a certain pleasure in submitting for your consideration such views on this matter as I have had opportunities of forming. It will remain for you to decide whether they are or are not correct. My object will be gained if I succeed only in awakening you to the importance of weighing seriously the principles which in the course of this paper I may have occasion to enunciate.

In pursuing this enquiry we find that man, placed by nature at the head of the creation, possessed of faculties, sentiments, and affections which exalt him above the sphere of all other animals, and subject to passions which degrade him to their rank, is, nevertheless, so apt to mistake the relation naturally subsisting between mind and body, that he often sacrifices his comfort, health, happiness, and independence by seeking, in a blind spirit, the perfection of one at the expense of the other. He either thinks that he has nothing in common with the beasts from a proud consciousness of his own moral and intellectual greatness; or that he is nothing but an animal from the more humiliating conviction that his conduct is liable to be governed by similar passions and impulses. According to the first view, he looks upon the body as simply a temporary cage for the soul, which after death dissolves all connexion with it, disembodies itself, and returns to God; and according to the second, he regards the mind as the mere servant of the passions, which ministers

to their gratification during his present life, and perishes with them at his death. In support of the former he appeals to the superior attributes, which almost identify him with his Maker ; and in proof of the latter he points to the grosser feelings and sensations which he has in common with all other creatures. He argues, that having no horns, hoofs, tusks, nor claws, such as are possessed by the inferior classes as natural parts of their organism for defence and offence, having a stomach capable of digesting food only of certain kinds and in a certain state of preparation, and being exposed to the inclemency of the elements and vicissitudes of temperature, it would, indeed, have been impossible for him to have preserved his species without some compensation, and this he conceives is the reason of his gift of intelligence.

Now, without questioning the morality of either of these theories, I am compelled to confess that, in practice, they both fall greatly short of the truth. If we assume with the first, that the body bears no other relation to the soul than the shell does to the kernel, we are thereby led to conclude that while the former is only a convenience, the latter constitutes the essence of man ; and, in proportion as the value of the seed is greater than that of its husk, is the necessity of attention to the affairs of the soul stronger than that which is due to the body. Hence we might incline to think that if the soul is sound, it is comparatively trivial whether the body is so or not ; for, after all, the latter is no more than a house for the former ; and it is enough to inspect and repair it when some positive disorder impedes its functions. But it is forgotten in this comparison, firstly, that a house, carelessly built and neglected, will tumble down quicker and cost more in the end than one which is from the first constructed with care, and regularly examined and put to rights at stated seasons afterwards ; and secondly, that the connexion between the body and the soul, instead of being of the nature of that which exists between a house and its owner, has a more appropriate analogy to the relation subsisting between the steam-engine and its power. So long as the engine is in order and submitted to steam-force, its motions go on uninterrupted ; but the moment some vital part of its frame-work is deranged it ceases to move notwithstanding the continued application of the same force. As here it is the active manifestation of the steam power that is lost and not the power itself, so in death it is the active manifestation of the soul that is lost and not the soul itself. So too as the proper development of the former requires that the engine should be sound in all its parts, so the proper development of the latter requires that the body should be sound in all its parts : and as the former shows itself in, what we call, locomotion, so the latter shows itself in the phenomena of life. The mind of man forms

only a part of his life; his instincts, a second; and his excitomatory acts, a third. If the human mind, then, is only a part of the human life; and the human life, the active manifestation of the human soul; and the human body, the condition of that manifestation, it follows as a necessary corollary, that whatever affects the human body, affects likewise the human life, and, if the human life, then also the human mind, since the human mind is merely a part of the human life. It is absurd, therefore, to suppose that the mind of man alone makes his soul, and that it can be improved while his body is neglected, just as it is absurd to suppose that locomotion can increase if the locomotive itself is neglected.

In these observations it is far from my intention to disparage the true position of the mind in the constitution of man. The mind of man is undoubtedly the best and the most wonderful part of his life; indeed, it is that part of it which alone distinguishes him from all other beings; enables him to analyze and recombine nature so as to unravel her laws, and, by their study, to imitate her operations; gives him power to invent instruments of research, which in one case conducts him so near the planets as to count their revolutions and explore their surfaces; and in another, so close to the hidden laboratory of nature as to discern and describe particles of matter no bigger than the forty-thousandth part of an inch; invests him with the agency of the elements; hallows his natural affections; restrains his passions; and raises his heart to the sublime conception of the Deity: yet still it represents only a part of his life; and as whatever acts on the whole, must act on its parts, so, whatever acts on the body, acts on life, and, through life, influences the mind.

Or if we adopt the second theory, we are forced to admit that the mind of man is only an adjuvant to his instincts—that it is a compensation for his natural helplessness for the purposes of defence and offence, and a peculiar gift to him in order that he may surpass all other creatures and enjoy a greater range for the indulgence of his passions. He observes that with all other animals self-preservation, the gratification of sense, and the continuance of the species, are the three grand objects of existence; and he hence infers that the same must be true with him. He perceives that they avoid danger, and fight when necessary in self-defence or otherwise, so does he; he perceives that they have an appetite for food, drink, &c, so has he; he perceives that they shelter themselves from storms, rain, cold, and heat, so does he; and from this he concludes that the proper employment for his talents consists in multiplying and improving his means of defence and offence; diversifying his food, drink, and the like, and accommodating them to his taste; contriving a variety of dresses; and erecting all manner of domiciles and sheds. He seems to think that the

heavens are furnished with stars so that he may have light, that the earth is rich so that he may have plenty, and that Nature has given him a mind so that he may subdue the brutes and press them into his service. Over-living, over-dressing, over-reaching, &c., become with him hence the most natural business of life, until he is so altogether over used that he cannot look with pleasure upon any thing requiring steady industry and patience and considers those as raving mad who give themselves the trouble of studying the learned professions. He prides himself on his being neither a politician nor a scholar; and that *he* lives to enjoy, while *others* live to suffer. That he does live, there is no question about that; but that he enjoys, is a very disputable point; on the contrary it is plainer that he lives but to grow—to grow, that is to say, in sin, corruption, and contempt. He is either a being of unsymmetrical proportions, obese in every part from an excess of fat; or a squalid pigmy wretch from a total failure of tone and digestion. The sensuality he worships debases him below the standard of the vilest of men; and if he live ever to recover his reason, it is only to mourn over a shattered constitution and ruined hopes of happiness.

This is because the instinctive life is the sum total of the brute-life; whereas in man it forms only a part, and that second in importance to the mind, in the active manifestation of his soul: and as the condition of the proper development of that manifestation lies in the entire soundness of the body, so it follows that it is vain to expect perfection in instinctive enjoyments unless that intricate machine is simultaneously cared for. It is consistent for the mind to grow with the body, it is natural for the passions to expand with the constitution; but it is aliko inconsistent and unnatural for either to flourish alone. In the inferior beasts, such as the tiger and the lion, the instinctive acts are accompanied by so much muscular effort under the best conceivable circumstances that their bodies and passions are exercised together. But in man, in addition to his instincts, there is a mind; and, although proper food, exercise, fresh air, good clothing, and comfortable lodging, may improve his physical frame, yet still if his mind is undeveloped, he will be, sooner or later, either completely exterminated by the more powerful contemporary beasts of prey, or condemned to ignominious servitude by others of his own race of superior talents and acquirements, though they may not excel him in constitutional vigour. Consequently the man, who acknowledges no other motive of action than the impulses of his passions, not only insults the dignity of his nature by subjecting his reason to his instincts, but he voluntarily places himself in a position beneath that of the carnivora and pachydermata of our forests; for he cannot contend with them; then, even with equal chances of success.

able monuments of her by-gone glory. She has left for our study the inimitable labours of her Homer, Aristotle, Zeno, Plato, Socrates, Xenophon, Thucydides, Herodotus, Demosthenes, Pythagoras, Diodorus, Polybius, Strabo, Sophocles, Theophrastus, Hippocrates, Esculapius, Euripedes, Euclid, Ptolemy, Aristophanes, Phidias, Praxiteles, and many others; her splendid sculpture and architecture in innumerable statues, public edifices, and ruins; and her entire civilization in polity, philosophy, and other matters of usefulness. Centuries have elapsed since Greece declined and fell: yet the name and policy of her Alexander the Great still find an echo in the heroes of our days. But Greece did not fall while she encouraged and fostered the manly occupations of her sons. She passed into bondage only when the vices of luxury and idleness had devoured the natural energy of her people, and seduced them into quarrelling among themselves.

Upon the ruins of Greece rose the mighty Empire of the Romans. The Romans, like the Greeks, were a martial race. The sports of the circus, amphitheatre and gymnasium, wrestling, gladiatory fencing, and hunting matches, and military practices, were the favourite resorts of all classes; indeed, bravery, gallantry, freedom of thought, and truthfulness combined, alone made one a true Roman. In speaking of the exercises of the Roman army, after describing their discipline, says the celebrated historian Gibbon; "And yet so sensible were the Romans of the imperfection of valour without skill and practice, that, in their language the name of an army was borrowed from the word which signified exercise. Military exercises were the important and unremitted object of their discipline. The recruits and young soldiers were constantly trained, both in the morning and in the evening, nor was age or knowledge allowed to excuse the veterans from the daily repetition of what they had completely learnt. Large sheds were erected in the winter-quarters of the troops, that their useful labors might not receive any interruption from the most tempestuous weather; and it was carefully observed that the arms destined to this imitation of war, should be of double the weight which was required in real action. It is not the purpose of this work to enter into any minute description of the Roman exercises. We shall only remark, that they comprehended whatever could add strength to the body, activity to the limbs, or grace to the motions. The soldiers were diligently instructed to march, to run, to leap, to swim, to carry heavy burdens, to handle every species of arms that was used, either for offence or for defence, either in distant engagement or in a close onset, to form a variety of evolutions; to move to the sound of flutes, in the Pyrrhic or martial dance. In the midst of peace, the Roman troops familiarised themselves with the practice of war; and it is prettily remarked by an ancient historian who

had fought against them, that the effusion of blood was the only circumstance which distinguished a field of battle from a field of exercise. It was the policy of the ablest generals, and even of the emperors themselves, to encourage these military studies by their presence and example; and we are informed that Hadrian, as well as Trajan, frequently condescended to instruct the unexperienced soldiers, to reward the diligent, and sometimes to dispute with them the prize of superior strength or dexterity. Under the reigns of those princes, the science of tactics was cultivated with success; and as long as the empire retained any vigour, their military instructions were respected as the most perfect model of Roman discipline."

The wonderful eminence to which this peculiarity of character enabled the Romans to attain is sufficiently attested by another remarkable passage of Gibbon. "In the commonwealths of Athens and Rome," he observes, "the modest simplicity of private houses announced the equal condition of freedom; whilst the sovereignty of the people was represented in the majestic edifices destined to the public use; nor was this republican spirit totally extinguished by the introduction of wealth and monarchy. It was in works of national honour and benefit, that the most virtuous of the emperors affected to display their magnificence. The golden palace of Nero excited a just indignation, but the vast extent of ground which had been usurped by his selfish luxury, was more nobly filled under the succeeding reigns by the Coliseum, the baths of Titus, the Claudian portico, and the temples dedicated to the goddess of Peace, and to the genius of Rome. These monuments of architecture, the property of the Roman people, were adorned with the most beautiful productions of Grecian painting and sculpture; and in the Temple of Peace, a very curious library was open to the curiosity of the learned. At a small distance from thence was situated the Forum of Trajan. It was surrounded with a lofty portico, in the form of a quadrangle, into which four triumphal arches opened a noble and spacious entrance: in the centre arose a column of marble, whose height, of one hundred and ten feet, denoted the elevation of the hill that had been cut away. This column which still subsists in its ancient beauty, exhibited an exact representation of the Dacian victories of its founder. The veteran soldier contemplated the story of his own campaigns, and by an easy illusion of national vanity, the peaceful citizen associated himself to the honours of the triumph. All the other quarters of the capital, and all the provinces of the empire, were embellished by the same liberal spirit of public munificence, and were filled with amphitheatres, theatres, temples, porticos, triumphal arches, baths, and aqueducts, all variously conducive to the health, the devotion, and the pleasures of the meanest citizen. The last

mentioned of those edifices deserve our peculiar attention. The boldness of the enterprise, the solidity of the execution, and the uses to which they were subservient, rank the aqueducts among the noblest monuments of Roman genius and power. The aqueducts of the capital claim a just pre-eminence; but the curious traveller, who, without the light of history, should examine those of Spoleto, of Metz, or of Segovia, would very naturally conclude, that those provincial towns had formerly been the residence of some potent monarch. The solitudes of Asia and Africa were once covered with flourishing cities, whose populousness, and even whose existence, was derived from such artificial supplies of a perennial stream of fresh water."

This is only as regards the works of public utility; but the Romans have left us other remains of their greatness of still more value. The sciences which originated with the Greeks, advanced with them a step farther; the arts, polity, and law received a new turn; religion passed from senseless idolatry and scepticism into the living doctrines of the Christian Church; another literature and another philosophy sprang up in addition to the old; and an enterprising nation set their hearts upon civilizing the world. The names of their Cæsar, Tacitus, Horace, Cicero, Virgil, Ovid, Livy, Pliay, Lucian, Seneca, Sulpicius, Papinian, Ulpian, Plutarch, Epictetus, Julian, Celsus, Aretæus, Galen, Justin Martyr, Irenæus, Tertullian, Origen, Lactantius, Cyprian, Chrysostom and Clements, are still revered as synonymous with the names of the world's benefactors. They were the promoters and defenders of a civilization which even at the present hour we cannot but look up to with admiration and respect. The noble emperors of Rome sought the enlightenment of the races they conquered with a paternal solicitude, and admitted them to every privilege of Roman citizens, and to the highest dignities of the State whenever they shewed themselves deserving of such favours. Yet amidst the apparent prosperity of this great people the canker of wealth was slowly, but surely, at work; luxurious vices, relaxation of discipline, internal discord, and general decay, followed as inevitable consequences, till the once mistress of the world was completely subjugated by the Goths, Vandals, Huns, Franks, Lombards, and Mussulmans.

The darkness which ensued on this event hid for a time the glorious bequests of both Greece and Rome. During the middle ages there seemed to be a fallow in the human mind. The succeeding crusades, and the tilts and tournaments, were the first indications of the returning civilization. Nearly all the Governments of that time were essentially feudal Governments. The feudatory ranks were constantly reinforced by distinguished chiefs, who held fiefs from the Crown in consideration of their military services. These

powerful nobles, although they acknowledged allegiance to a king, generally exercised sovereign authority within their respective jurisdictions, often fought and made treaties amongst themselves, without seeking his sanction or interference, and sometimes waged war even against his own majesty. This was, as might be expected, a fruitful source of disturbances, and these disturbances kept all the tribes, nations, and their royalties, in a state of constant readiness for meeting every species of contingencies. The efforts made with this view necessarily led, under favourable circumstances, to great physical development, while at the same time little or no leisure was left for intellectual advancement. This accounts for the remarkable dearth of works of genius or merit on any important subject during this epoch. But an era was fast dawning on our race, which was destined to outshine in splendour even the Augustan age of Rome. The ambitions and feuds of the nobles were gradually suppressed by the growing power of the monarchies, and the common people, thus set free and protected, soon learnt to turn their attention to the arts of peace. This done, and an extraordinary change was the immediate result. The vigour and enthusiasm which had been so long wasted in bootless strifes, now displayed themselves in general improvements. In warfare, law, polity, commerce, morality, literature, the arts and the sciences, and even in the habits and manners, a great reform was clearly discernible. Wars were now seldom waged for private objects; diplomacy was generally shaped for the public welfare; laws were rarely based on class interests; commerce was usually unshackled from superstitious prejudices; literature extended itself by the discovery of the art of printing; the arts and the sciences enriched themselves by experiments and observations; the habits of men grew peaceful and industrious; and their manners courteous and kindly. A Sir Isaac Newton, La Place, Voltaire, Harvey, Linnæus, Cuvier, Herschel, Davy, Leibnitz, and many more were the fruits of this progress. Thus was formed what we so proudly style the modern civilization, the blessings of which we may all enjoy. But in order that we may so enjoy them, it is necessary that we should extract wisdom from experience, and not misunderstand the verdict of history on the relation which subsists between our intellectual and physical endowments. Historical evidences show that mental achievements are more durable and important than corporeal performances; but historical philosophy proves that mental greatness must have for its basis corporeal soundness. Alexander the Great, Julius Cæsar, Cromwell, Washington, Napoleon Bonaparte, the late Duke of Wellington and Blücher, were all men of extraordinary genius: and were they not too distinguished for the peculiar hardihood of their constitutions and for their power of mental and physical endurance? Yes, they

were the happiest examples of this desirable combination, which is productive of a twofold advantage.

The life of man is an aggregate of changes; supply and waste are its two grand processes, the blood the sole theatre of their united operations. From infancy to manhood the supply exceeds the waste; from manhood to old age the waste exceeds the supply, —a flood and ebb movement very liable to be affected by accidental circumstances. The blood receives its materials of renovation from the digestive apparatus, and discharges the effete substances through the various natural emunctories. From one side of the heart it passes to the lungs, absorbs oxygen, and returns to the opposite side, which, by the contraction of its powerful muscles, propels it into the general circulation. Here it comes in contact with every tissue and structure, which by the action of its oxygen become partially disintegrated and heated, and so make room, and are excited, for attracting the new material of nutrition of which the blood-vessels are the carriers. Now suppose a person is at rest, his heart acts slowly, his respirations are few, his consumption of oxygen is small, his circulation feeble, and his waste and nutrition languid. Suppose him in motion, his heart acts quickly; his respirations are frequent; his consumption of oxygen great; his circulation rapid; and his waste and nutrition (provided there is a sufficiency of suitable food,) active and vigorous. General sedentary habits, therefore, engender a general feebleness of nutrition and development, but general active exercises, a general exaltation of those functions. Who has not noticed the quick breathing, the swift pulse, the profuse sweating, the pleasant glow, and the craving-hunger, from exercise in the open air? And who that has practically experienced them will deny the obvious advantage of uniting physical with mental education? I believe none. The union, on the one hand, strengthens our intellectual powers, moral sentiments, feelings, and affections; on the other, it gives vigour and fortitude to our physical constitutions. Therefore, regular exercise is to our body what education is to our mind. The former melts down the superfluous fat, shapes into symmetry and beauty the exterior form, and invigorates the constitution: the latter orders and adds to the sources of our knowledge, softens into humility and loveliness the natural coarseness of our manners, and strengthens and sharpens our faculties and understandings. And the combination of the two secures for us the best condition of health, longevity, and worldly success.

To illustrate this more fully we need only remember the labour, the patience, and the judgment ordinarily required in the execution of any systematic project. Whether we are engaged in a Geological, Geographical, Botanical, or Zoological survey, it is equally incumbent on us to be out on our legs for the greater part of

hunting, riding, swimming, skating, rowing, &c., all which conduce to health, amusement and instruction. Then he grows into a man, cultivates his whiskers, enters into society, and joins the army or the navy, or becomes a doctor, lawyer, minister, statesman, merchant, factor, clerk, scholar, or any thing else he may choose. But wherever he is, and whatever he has to do, his innate love of active sports and exercises accompanies him through life: and, under favorable circumstances, we find him, hence, an accomplished sailor, or soldier, or huntsman, or racer, or boxer, and so forth. This habit of activity hardens his constitution, and gives him great endurance and range in all physical and intellectual occupations: and it is this which makes him superior to men of other nations whose social institutions are less perfectly developed.

What is true of the Englishman is also true of the Frenchman, the German, and the other European races; and for that reason it is that they are all more civilized and powerful than the people of all other countries? In war their strength, endurance, skill, combinations, discipline, courage and resources are always more than a match for the most martial of the uncultivated nations; and in peace their diplomacy, learning, science, industry, ingenuity and charity vastly surpass the rude conceptions of those barbarians. This is the reason why the European powers are so jealous of the probable conquest of Turkey by Russia. The Turks are a semi-barbarous people; and their weakness from that cause is a guarantee of their good faith and manageableness. The Russians are reckoned among the most warlike and arbitrary of civilized Governments, occupying a country already as large as the rest of Europe, and entertaining an army of no less than 1,200,000 men. So long as Roumelia and Asia Minor are in the hands of the Turks, the Black Sea is open to the commerce of the world, and the Mediterranean is a neutral water for all. But let Russia occupy those countries, and she immediately grows more than a match for united Europe, shuts up the Dardanelles, keeps a formidable Mediterranean fleet, threatens Syria and Egypt, and cuts off the overland route to India. After this nothing can obstruct her marching eastward or westward at her sole pleasure and convenience. And all this on account of her more advanced social institutions than those of the Turks, and the dread of disturbing the balance of European powers under her government.

The reason of our Affghan Campaigns likewise arose out of the policy of checking the progress of Russia along the Caspian shores to the north western frontier of this country; because the neighbourhood of Russia is politically less desirable than that of the savages who inhabit the adjacent provinces of Affghanistan, Bokhara, Tartary and Persia.

This proves, I trust, convincingly the very great urgency of

uniting physical training and mental instruction: and it now remains for me to enquire how far this is done in this country, and what improvements might be effected in this respect. It is necessary for us to learn this not only for ourselves, who have already suffered from the ignorance of our parents, but also for our children, our wards, our dependents, and our neighbours. It is a solemn duty which calls us to consider this matter; and the sooner we do it the better it is for us, for our posterity, and for our country. I will endeavour to present to you at the outset a cursory sketch of the life of one of our countrymen, and then we shall understand more clearly our own defects. Here he is, only a few days old, going through the ceremony of *shostee* in which the dust from the toes of an assemblage of Brahmins has to be sprinkled on him for the sanctification of his body. We find him next in the midst of another observance: he is now six months old, and he receives his *Anno-prasone*, or the taste of rice for the first time. We meet him again at the age of three: he has not been weaned, is still naked, goes wherever he pleases, does whatever he likes, says anything and everything, beats the servants with impunity, eats as he wishes, obeys none, learns all sorts of mischief, is taught no manners or decency, and cries loudly and lustily if any attempt is made at checking him or if his longings are not immediately satisfied. When six years old we see him a fourth time still pampered and petted, naked, wild, rude, vicious, cunning, wilful, spout, vulgar, and as yet without his *khurree* or the ceremony of commencing to write with a reed. After passing through this tomfoolery, he is placed under a Gurumohashoy, (native teacher) who initiates him first into the mysteries of the alphabet, and then spelling, arithmetic, letter-writing, &c. The Gurumohashoy is also expected to discourage and prohibit all attempts at playing and rough exercise in his pupils, because they are deemed unbecoming in well-bred natives. Every infringement of this check is visited with the severest punishments, and hence the poor boy often gets his back shamefully cut and disfigured for such offences with the rattan. When he is eight or nine (or, if a Brahmin, has been invested with his sacred thread) under favorable circumstances, he is sent to school for studying English. Here he is thrown among a large number of children of his own age and of all classes, similarly brought up and having a similar dislike to physical exertion. Except when absolutely engaged with his lessons, therefore, he sits with a knot of these boys, and gossips about this man's faults, that man's virtues; and the other man's vices; this man's wife, that man's daughter, and the other man's mistress; this man's *Doorgah*, that man's *Rash*, and the other man's *Jogut-dhartee*; this man's dogs, that man's cats, and the other man's horses; this man's dress, that man's thrift, and the other man's

extravagance; this man's *jattrah*, that man's *nautch* and the other man's *fireworks*, and so on if he do nothing worse. The school hours over, and he hurries home, where, after a little refreshment, we see him once more sitting down at dice, cards, chess, or chat, with some of his neighbours. The night comes on, the clock strikes nine, and then, perhaps, he goes to his supper. This finished he retires to his chamber, takes up a book, doses over it, is disgusted, shuts it up, and lies down to sleep. The morning dawns, and he leaves his bed, seizes his books, learns by rote his lessons, bathes, breakfasts, and returns to school. He is now sixteen years old, married, and, perhaps, called on to choose his line of life. He reflects on the 7 or 8 years he has already spent at school, the progress he has made, and the probability of his gaining a scholarship. If he despair of the latter, he at once gives up his studies and devotes his time to the improvement of his handwriting so that he may soon become a clerk. If he believe in his chances of success, he carries a few seasons more at school, exhausts all the scholarships, becomes the father of a family, and then seeks some public employment, either as a teacher, or as a clerk, or as a moonsiff, deputy collector, deputy magistrate, or mercantile assistant. There he is now at his office working away from 10 o'clock in the morning till 4 o'clock in the afternoon. After this he believes himself tired, returns home, washes himself, eats his refreshment, chats with some acquaintances, says his prayers, eats jokes, sups, and retires to rest. The morning finds him asleep, he awakes at eight or nine, smokes his *hookah*, performs his ablutions, passes through his prayers, breakfasts, dresses, walks to his office, and resumes his desk work. And this he repeats day after day, week after week, month after month, and year after year, until he can do it no more from accident, disease, or death.

If he is not a gentleman, then he does not trouble himself at all with education, begins to labour for his food as soon as he can speak, and walks through the dull routine of his life in a hand-to-mouth struggle. Or if he is both needy, uneducated, and unwilling to work in the field, then he becomes a peon or a durwan, when he frequently makes it his sole business to practice gymnastics, and promote his physical growth by all means in his power. Or if he is idle, then he lives as a vagrant. Or if he knows some thing of the vernacular, then he earns his bread as a sircar, or as a small shop-keeper. Or if he is a Brahmin, then he prides himself on his caste, displays every where his *poyta*, and demands a portion of the fruit of other men's industry as his right.

This is still an imperfect picture; but such as it is, it is unfortunately a very faithful one and I tremble to think that there are so few of us even at this meeting who do not fall under some of

these heads. Granting this is so, let us ask ourselves the question, of what good are such lives to our community, to our country, and to our children. Every such life is a circle in itself, for it begins in nothing, accomplishes nothing, and ends in nothing. It is no unit in the commonwealth of civilization, and, if we multiplied it ever so much, we should gain no more than if we multiplied nothing by nothing. This is, indeed, a most painful and melancholy reflection; and, if we do not wish to be alienated from our only safe destiny, and blotted out as a nation, we must needs forthwith look to ourselves, watch in time the enemy at our back, girdle our loins, and resolutely urge on till we attain to our proper place in enlightenment and material power. If we value ourselves, value our families, value our posterity, and value our country, we should, I say, at once make up our minds to this, and push on; for push on we must, sooner or later, since there is no safety in our present course and present indifference. And this is, by no means, as some pretend to persuade us, a hopeless task. We have an earnest of our success in the undertaking, on the one hand, in the great physical growth arrived at by those of our countrymen who use regular and systematic exercise together with wholesome food and abstinences, and, on the other, in the acute intelligence evinced by all who devote themselves to mental pursuits. What we do want for increasing our fortitude, energy, and general tone of life, is simply a combination of physical and intellectual culture in the education of our youth, and a radical change in some of our old and barbarous institutions: and surely there can be no insurmountable difficulty to hinder our achieving this after we shall have once overcome our own culpable and fatal inertia.

The first and the most urgent requirement for this purpose consists in the introduction of female education; for in the absence of kind and intelligent mothers we shall struggle in vain to secure perfection in the early training of our children; and how much of one's subsequent success depends on this training, I hope, I have sufficiently explained in the preceding parts of this discourse. When we shall have obtained educated women, it is then only that we shall have taken the first right step in our country's regeneration by procuring for ourselves the chastening society of intelligent mothers, virtuous wives, and well-bred sisters; it is then only that we shall have created for us happy homes where our progress in learning and manners, instead of being retarded, will be hastened and fostered with a tender care, and our existence sweetened by a perpetual flow of love and sympathy; and it is then alone that we shall be prepared to effect those reforms which we now fruitlessly sigh for. I am really astonished that we should have remained so long so utterly insensible of these grave interests, when, if we had the smallest spark of European spirit and patriot-

ism, we should have been holding at this moment a prominent place in the esteem of the world. But what is past, is past; we are masters only of the present; and God bids us use this to the best advantage and so as to influence the future. It is to be hoped, therefore, that we shall lose no more time in commencing this holy work—*viz.*, the education of the dearest partners of our life.

The next requirement for bettering our condition forms the legitimate subject on which I promised to address you this evening. It is neither more nor less than the union of physical with intellectual education. This has not been hitherto practically carried out; and, hence, our mental culture has failed to produce as yet a single individual to whom we can proudly point as one whose zeal, vigor, and perseverance have been above mediocrity, and whose talents have thrust him forward into the ranks of eminent and distinguished men. This may be partly owing to our peculiar political circumstances, but I cannot persuade myself to believe that it is wholly due to that cause; for I am sure that had we shown ourselves great as a nation, we should have had more confidence and encouragement accorded to us than we are thought deserving of at present. If we are despised and neglected, it is because of our own faults, and it is alike ungenerous and unjust to blame others for our misfortunes. We have alienated ourselves from our duty, and by that we have forfeited all claim to our natural rights and privileges. We have omitted to use our opportunities to advantage, and our degradation is a necessary consequence. But even now if we mend our errors, we shall once more elevate ourselves in the judgment of the world, and merit the commendation, instead of the unfavorable opinion, of those who have to bear evidence of our capabilities and moral worth. We must do this in earnest, and not merely in the empty phraseology of a popular harangue. The use and encouragement of physical exercise, along with intellectual culture, are what we need for this purpose; and we must daily set apart for it a time when we may practice ourselves in the same manner as we see our durwans always doing—*viz.*, wrestle, toss, tumble, leap, run, climb, &c. To this we may add boxing, dumb-bells, single-stick, fencing, cricket, sports, swinging, swimming, rowing, hunting, fishing, billiards, riding, walking and any other pastime demanding muscular exertion we may prefer. When we are thoroughly impressed with the importance of these practices, the general approbation of the multitude will soon dissipate all antiquated prejudices, and induce us to adopt the more manly spirit of emulating each other. The mornings and evenings are undoubtedly the most suitable periods for gymnastic performances, and at those hours matches might be fixed in appropriate localities at which any one who had a wish

might join on condition of his engaging to obey the rules laid down for preserving discipline and order, and to submit his merits to the decision of the umpires. In fair weather these matches might come off in the open air; but during the rainy and hot days, they might take place under large sheds such as the wisdom of the Romans, or of the military riding schools of our own days, had suggested to them to erect. The principal inhabitants of each district might be invited to make the preliminary arrangements; or where there are schools or colleges, unless such things were offensive to the feelings of the community by which they are supported (as, at all events, they would not be in the Upper Provinces), the teachers of these institutions might be requested to do so instead, as well as to sit as judges of the games. In particular cases a special Professor of Gymnastics might be employed with advantage. Then all these local seminaries might be connected by a general management, whose duty should consist in framing rules, collecting subscriptions, rewarding the diligent, classifying the combatants by a more universal competition, and publishing an annual report for the information of the public. The benefits that would result from this measure are quite incalculable, and the whole machinery of Indian society would be altogether remodelled. When this great change shall have been brought about a more manly tone will be infused into every native breast, the excessive timidity and sensuality which now disgrace our countrymen will come to an end, and the evils of polygamy and early marriage will be for ever banished from our shores. Our morality, too, which admits of much improvement, will be then considerably purified and suited to the age, and, if deemed advisable, completely changed. Vigor and industry will re-place our present apathy and helplessness; and plenty, cheerfulness, and happiness will be diffused all over the land of our birth.

This is my conclusion, gentlemen; I shall be glad to hear now what you think on this subject.*

* Shortly after the delivery of this lecture a gymnastic class was formed in the Hindu College under a French master, but, owing to causes which are not apparent, it proved a failure. Since then, however, several native associations have been formed for the encouragement of riding and other athletic amusements, which are gradually becoming more and more popular every year; and a legal enactment has been passed by the legislature sanctioning the marriage of Hindu widows, which has been carried out successfully in several cases.

the first desire he feels is to provide for himself and his family. Secondly, man is an animal of gregarious habits, bound by social laws, and he rises or falls with the community of which he is a member. If he do a good action, he serves himself as well as his neighbours; if he do a bad one, he debases himself and disgraces his associates. But sometimes personal are opposed to public interests, and one of them must yield that the other may be satisfied. Thirdly, man believes in a Creator, venerates Him for His goodness, and perceives the necessity of complying with the indications of His will. The duty of man, then, is of a most composite character. Firstly, there is the duty to himself and his family. Secondly, the duty to his country. And thirdly the duty to his God. Or, in other words, he has private, public, and moral duties. Can anything be dearer to a man than himself, his family, his country and his Religion? Religion tells him to leave his father and mother if they stand between himself and his moral obligations. Patriotism bids him sacrifice his private interests to the public good. And paternal solicitude urges him to do that which will benefit his children. These are all strong motives of action, especially when they all point to the same end; and the only feeling that might rise in opposition to them is filial tenderness, and that only when the parents are ignorant or blindly bigoted. But is the ignorance or bigotry of one's parents any valid ground for his obeying them against his own convictions? Certainly none. Parents are to be obeyed only in those matters which do not involve higher obligations. But when the sacrifice they require is that of the interests of himself, his posterity, his country, and his Religion, he must fling himself away from such parents; for their sorrow then is a just punishment of their culpable ignorance and stupid interference. Every man will judge for himself. We have no right to bind the consciences of our children except in their youth, and we should concede no right to our parents to limit our own. It is the duty of most animals to defend and provide for their young: and so, by nature, it is likewise a human duty. Consequently, for the mere fulfilment of this duty, a human parent has no more claim to implicit obedience from his children than those have from theirs; and, moreover, when this claim is opposed to their physical, intellectual, and moral well-being, it is simply absurd. We owe gratitude to our parents for the nursing of our youth; and all that we need do in return for this act is to support them in their old age and infirmity, if they have not themselves had the foresight to provide against those natural evils, and to pay them due care and attention in matters which conduce to their comfort and happiness: but we must grant them no power of mischievous meddling in affairs which no way concern their interests. We may consult them on business as we consult our friends,

But the present Charter Act has provided that they are absolutely open to men of all colours, castes, creeds and nations ;

of the greatest dependent empire which the world has ever seen, lays down for your guidance the great principle that the natives of that empire are for the future to be admissible to all offices within it, as a means of securing the permanent allegiance of the Indian races, and of making the bond which unites them to us increase in strength as they themselves increase in knowledge and civilization. But Parliament having once laid down this great principle, leaves everything else to you. No native of India, however manifestly fit for your service, can bring an action to prevent his exclusion from it by reason solely of his colour. No friend of the natives of India can obtain a mandamus for such a purpose. The Legislature has simply expressed its wishes, and trusts for the accomplishment of them to that zeal for the advancement of the Asiatic races which you have conspicuously displayed in the liberal education given at your colleges, and in the great number of native Indians whom your governments have appointed to lucrative and responsible offices in the uncovenanted services.

"We are not, then, going beyond what is warranted by your position as the enlightened rulers of our eastern empire on the one hand, and as the faithful and willing subjects of the Queen and Parliament on the other, when we assume, that if we can lay before you a case for the admission of a native to one of your covenanted services, to which no objection can be made of a stronger kind than the objection which may be made to the admission of any native to any of those offices from which they have been heretofore excluded, we shall find you not only willing but anxious to carry into effect the intentions of Parliament.

"We think we can convince you that Dr. Chuckerbutty's is such a case.

"His own qualifications for your medical service are sufficiently proved by his printed testimonials (see Appendix) : and indeed we are not under the necessity of using any argument or exhortation on this part of the case, because we have been informed by Dr. Chuckerbutty, that your Honourable Court have already recognised his professional and personal merits in as cordial a manner as might be expected from your position as the patrons and protectors of the Asiatic subjects of the British Crown.

"He possesses, however, one qualification (and he owes the possession of it in a great measure to your bounty) which appears to us so important, with reference to the general question of admitting natives to the covenanted services, that we cannot pass it over in silence.

"The entrance to the medical service is not like that to the civil and military services, generally closed against all who have not been educated at Haileybury or at Addiscombe. Even if Dr. Chuckerbutty had never been out of Calcutta, he would have been qualified for your medical service, if he had there acquired that amount of professional knowledge and that reputation for general good conduct which now distinguish him.

"But we acknowledge that, however anxious we might have been to see him placed in point of rank, honour, and social position, upon a footing with your European medical officers, we should not have desired to see him receiving pecuniary emolument equal to theirs, if he had not earned his testimonials by residence and study in Europe.

"We proceed to remark upon the nature of the service into which Dr. Chuckerbutty aspires to be admitted.

"The three services to which natives are made eligible by the 87th section of the Charter Act are the military, the civil, and the medical.

"If we were asking that a native Indian should be appointed to a cadetship, we think it might reasonably be said that such a nomination would not be the most prudent commencement of the new system, and therefore not a sound exercise of the discretion which Parliament has left to you in carrying into effect its benevolent intentions.

"The civil service and the medical service then appear to us to be the proper field for first bringing into practical operation the principle laid down by Parliament.

"We do not say that no plausible objections can be raised against nominating a native civil servant, or a native assistant surgeon, we say only, first, that all such

one gets now a covenanted appointment through the medium of competition, he not only does not owe his nomination to individual favour or class interests; but he stands on the highest of all grounds, the ground namely of his personal merits tried by a fair and open competition. Hence, then, if there were no other reasons but this, I would strongly urge you to send your children to England without loss of time, that while you have the opportunity you may prove to the world by a sufficient number of instances that you wish to be admitted to the higher offices of Government, not through private patronage but upon your own solid merits which will bear comparison with those of any nation in the world. And to those who would embark on this duty, I would say mind only your duty and use your best exertions, and even if you fail, which I have no reason to fear, you will have well merited, at least, your country's gratitude.*

But there are other reasons why I should inculcate the necessity of visiting Europe. No native of this country, perhaps, is more in a position to estimate the force of this necessity than myself. I was born and bred as one of you, but what I then learnt, and what I have since learnt, give me a right to speak authoritatively on this subject. Gentlemen, I will remind you that I first left for England in March 1845 amidst many sighs and doubts. We had not gone far before the treasures of the deep broke upon us like a new world. The ocean's expanse, the dashing spray, the mighty waves, the fragile weeds, the soft medusæ, the flying fish, the blowing whale, the swimming turtles, the gambolling dolphins, the treacherous sea-snake, the innocent gull, the cruel shark, the submerged corals, the dangerous rocks, the distant mountains, the vaulted clouds—figured with grotesque imagery and many and varied hues, the rising and setting sun of the trackless sea, the silvery moon, the lightning's blaze, the tempest's howl, and the thunder's clap, were all objects of great splendour and passing wonderment. Then contrast with these the bells for meals, the small talk, the quick-spreading scandal, the thrilling music, the merry dance, and the melodious song, and you will image to yourselves a faint idea of the life on board ship. Ever and anon a quiet ripple, a distant wail, or a fading landscape brings the passengers bustling and crowding to a spot to gaze with gaping wonder and straining eyes for the cause of the excitement. Or, perhaps, the

* Since the opening of the services up to the present, 9 natives of Bengal, 2 Armenians, 7 East Indians, and 1 native of Bombay have successfully passed for the Covenanted Medical Service; 5 natives of Bengal, 2 East Indians, and 1 native of Bombay, for the Covenanted Civil Service; 4 natives of Bengal, 7 Armenians, and 1 East Indian, for the Calcutta Bar; several natives, East Indians and Armenians are now preparing in England; and a number of natives, East Indians and Armenians have visited Europe as travellers or merchants.

sea rolls heavily and the ship pitches uncomfortably, from which one half of the passengers are confined to their berths, spewing, scowling, and cursing all the time, while the other half coarsely jest upon the absentees and eat their dinners amidst the crash of crockery and the din of glasses, when it may happen that a sudden lurch throws head over heels a rubicund grinner, and he goes tumbling and rolling from one side of the deck to the other to the immense merriment of the whole company. Then it may be found that he has broken a bone or dislocated a joint, when a cry is raised that a heavy sea dashing against the rudder has lifted up the helm's man into the air and he is calling help, ho, the boat, the boat, while the forbidding spray is sparkling and breaking upon the deck. The next moment we may be doubling a cape, and, amidst doubts and fears, hope and joy, the ship sails prancing on the billows into a safe and commodious harbour. Now race the tiny boats and their wrangling crew, swearing loudly and lustily towards the anchorage, and in a few minutes more strange faces, yet stranger wares, heavy oaths, and horrible grimaces surround and bewilder the luckless voyagers. After much pushing and pulling, perhaps, one succeeds in getting into a boat, and then away he goes to the shore where a perfect crowd of hungry beggars await his landing to assail him with importunate demands for *buckshish* and a volley of endless requests; till jaded, harassed, gratified or disappointed, our curiosity hunter is glad enough to beat a retreat and return to his ship. But even in these visits, short and casual as they are, a lover of travels picks up an immense deal of information invaluable to him afterwards. He sees many countries and various races, and he learns their varying productions and different customs. Islands, capes, promontories, straits, bays, gulfs, estuaries, seas, oceans, and continents, he passes successively and rapidly by, and nature's grandeur he imbibes from its purest sources. He looks with admiration upon the huge pyramids, and the novel passage between the sea and the clouds in the Mediterranean water spouts, and he is dazzled by the solemn majesty of snow-clad hills and lofty mountains; while the deceitful mirage, the barren deserts, and their glowing sands, teach him how capricious nature is in the distribution of her gifts. Tasteful vineyards, luxuriant orchards, rich fields of beans and capers, vast groves of oranges and chestnuts, and blue-eyed, fair-complexioned damsels announce his approach to the European coast, and now the swift passing steamers, ships, brigs, barques, and vessels of war bring him each day fresh news from London. Malta passed, Gibraltar passed, the Bay of Biscay crossed, and he finds himself in the channel with the chalky cliffs of the coast of England standing out in bold defiance before him. The sky is lazy, the weather grows thick, the Isle of Wight

shields him from the sea, and he steams into the harbour of Southampton most probably with a shower; for it is said that it seldom happens that this port is free from rain.

Now he lands on the soil of freedom and the home of heroes. How different it is from the land of Pharaohs and the house of bondage he has left in the rear. He has as yet only seen a seaboard town, but still how beautiful are the chubby little children, the hazel eyes, the golden locks, the waving parasols, the comfortable houses, the neat pretty gardens, and the tidily paved streets of sea-girt Britain. But he has no time to lose, and away he goes mounted behind an iron-horse in a fine large vehicle soft and cushiony within. Strange it is to travel thus, and stranger still to pass by in quick succession, smiling fields of corn, green meadows, rich pastures, happy farms, busy towns, and tunnels and bridges without a single look of hesitation; when at length in the distance rise numerous spires and tall chimneys, looming through a vast mass of smoke and hailing your traveller to the Metropolis of England.

Who can truthfully describe the wonders of London? A volume will not suffice for the task. The crowded shipping, the splendid docks, the large ware-houses, the Tower, the tunnel under the Thames, the numerous bridges, the Exchange, the Mansion House, the Bank, Westminster Abbey, St. Paul's Cathedral, the National Gallery, the Houses of Parliament, the Colosseum, the many other public buildings, the Palaces, the Colleges, the Hospitals, the Theatres, the Operas, the Parks, the Gardens, the Menageries, the British and other Museums, the Courts of law, the Exhibitions, the Conservatories, the University, and the forty different learned Societies, form a very small part of the curiosities of this great capital. How fine are the streets, the drainage, the water supply, the gas light, the churches, the clubs, the monuments, the squares, the India and many other corporation houses, the Treasury, the Horseguard, the Admiralty, the Board of Control, the Exchequer, the Marlborough House, the Devonshire House, the Apsley House, the Somerset House, the Exeter Hall, the Guildhall, the Marble Arch, the Kensington Gardens, and the suburban towns of Clapham, Blackwall, Dulwich, Hammersmith, Battersea, Wimbledon, Brompton, Putney, Chelsea, Kew, Richmond, Hampton Court, Ealing, and Hamstead! How strict the police, how magnificent the shops, and what a profusion of wealth! Gentlemen, but to understand London one must be in London at least for five years before he can form an adequate idea of its greatness, vastness, riches, pleasures, vices, and population. On a Sunday the sudden subsidence of the busy and restless activity of the week is really a striking phenomenon.

But these are merely the surface scenes of English Society. What is deeper is still worthier to be known. How shall I introduce

you to the home-string of English life? Could I carry you there I could shew you fountains of the purest kind from which spring those principles of action and habits of thought which make the English name so universally respected. I should not exaggerate if I said that a day in London is of more value than a month in Calcutta. London is the centre of the great vortex of civilization, and towards it are drawn the noblest and the most distinguished of every profession and of every country. Men go there, if not always to reside, at least to visit and admire its curiosities and wonders. Consequently a stranger meets here, besides Londoners, foreigners of distinction from all parts of the world. Add to this that the English gentry in England are quite a pattern for imitation in liberal sentiments. In their own country, I must own, they shew every civility and attention to a native of India; for being free from all petty prejudices, they can sympathise with men from other countries, more especially from the British dependencies. They will shrink from no hospitality to a stranger, and omit no opportunity of introducing him to the great and the noble of the land, and shewing and explaining to him all objects of curiosity and interest. Go to the Collections of Zoology, of Botany, of Anatomy, of Paintings, of Antiquities, of Curiosities, of Mineralogy, of Paleontology, of works of Art, of Implements and Machineries, and you will find that there is hardly an object under the sun which has not been named, classified, described, and represented. The lion of the African deserts, the polar bear, the llama of Peru, the cassowary of the Indian isles, the mastodon of America, the kangaroo of Australia, the gold dust of California, the mummies of Egypt, the tomahoc of the Esquimaux, the remains of Nineveh, the palms of India, the oak of England, the fur of Russia, the images of China, the porcelain of Sévres, the telescope and microscope of the newest invention, figures and diagrams of the latest discovery, the tattered clothes of the last hanged criminal, the wax-models of the greatest personages, the statues of kings, heroes, and philosophers, the hieroglyphics of the most barbarous ages, and the Crystal Palace, will all greet you there: and besides, you will meet with new forms, species, and genera, of which you cannot now have the remotest idea. You will see how people from distant places come to view and study those objects, and what a mass of information they gather in the course of a few hours. Then there is the privilege of conversing with men of eminence in all departments of knowledge, and of witnessing the performance on the stage of many a master-piece of classical composition. Further, in common intercourse one has the opportunity of watching the daily routine of English life, to observe how English mothers teach their lisping babes to know God and to be good, how they manage their more grown up children,

instructing and amusing them at the same time, with what delicacy an English gentleman addresses a lady, and how charming and cheerful and withal modest, is the tone of the home-life of England.

But this is not all. Once in London a student has within his reach a variety of pleasures which I have not yet touched. Custom has so ordained that most of the European Colleges grant a vacation of two months during the bright days of summer. From the first of August to the last day of September, a student may roam wherever he likes and visit whatever he pleases without loss or suffering if he have the requisite means at his command; and in these times of Railway travelling he can do a great deal within that period. I know by experience how sweet is the pleasure of using those opportunities to advantage. I made several such excursions during my student life in London in addition to short trips into the country on various other occasions.

My first journey was to Paris. I went there in company of a distinguished Professor of University College. Our first stage was Brighton, a very gay, cheerful, pretty town, celebrated as a watering-place. Our next stage was Dieppe on the French side of the Channel. Dieppe is a fishing port and, therefore, not a pattern of cleanliness. Yet it contained objects which struck me most forcibly at the time. Its market was amply supplied with vegetables, fruit, and fish of all descriptions. The lower classes of French women wore a cap of curious construction; and the upper ranks were affable, fraternizing, and polite. The harbour, though small, was well filled, and had separate places for different kinds of vessels. The fort, not particularly deserving of notice. We travelled from this place to Rouen in a *diligence*. Our seats were in the coupé, and we found ourselves next neighbours with an intelligent Frenchman, a well-informed French woman, and a communicative driver. As we moved along up-hill and down-hill everything of interest to a traveller was dwelt on and minutely described. We could not have enjoyed ourselves more rationally than we did then. Arrived at Rouen we had not many hours to spare; yet within that time we saw much before we got into the train. Now we were whirled along the valley of the Seine leaving on each side beauties of uncommon splendour and loveliness, passing through tunnels, and crossing and recrossing repeatedly the Seine and the Oise, till late in the evening we entered the suburbs of Paris, and thus terminated a long day's journey.

If I have found it difficult to describe London, it is still less easy to draw a picture of Paris. At Paris are to be found the gayest of the gay, the prettiest of the pretty, the loveliest of the lovely, the shrewdest of the shrewd, the cleverest of the clever, the liveliest of the lively, and the most tasteful decorative magnificence

in the world. My recollections of Paris are of the most agreeable character; and the days I spent there were halcyon days of happiness. Often have I sat there literally buried in forests of skeletons, stuffed animals, anatomical preparations, classified minerals, plants, statuary, paintings, mechanical instruments, and books. Often have I listened with delight and admiration to the eloquence of Arago, Dumeril, Flourens, Dumas, DeBlainville, De Serre, Biot, Magendie, Bory St. Vincent, and others. Often have I visited the Academy, the University, the Colleges, the Garden of Plants, the Garden of the Tuileries, the Garden of the Luxembourg, the Notre Dame, the Louvre, the Tuileries, the Palais Royale, the Palais Bourbon, the Palais de Justice, the Luxembourg, the Chamber of Deputies, the Mint, the Arsenal, the Gobelins, the Bridges, the Observatory, the Royal Library, the Military School, the Hôtel de Ville, the Madeleine, the Place Vendôme, the Place de la Concorde, the Place Royale, the Fountain of the Elephant, the Hospital of the Invalids, the Hospital St. Lewis, the Salpêtrière, the Hôtel Dieu, the Military Hospital, the Military School, the Champs de Mars, the Champs Elysées, the Hippodrome, the Arc de Triomphe, the Barrière du Trône, the Port St. Denis, the Port St. Martin, the Panthéon, the Church St. Eustace, the Boulevards, the Cafés, the Restaurateurs, the Theatres, the Operas, the Cemeteries, the Ramparts, the Fortifications, and the suburbs of Montmartre, Versailles, St. Cloud, St. Germain, and Sévres. It would require a whole book to depict their varied contents and architectural grandeur. The Louvre, for instance, contains a vast collection of statues of all the Roman emperors, Grecian heroes, and pagan mythology; of pictures by Raphael, Rubens, Vandyk, Michael Angelo, Leonardo de Vinci, Canova, Guido, Corregio, Titian, David, &c., and of innumerable other curiosities impossible to recount. Versailles again has its palace full of busts of the French kings, arranged in their order of succession, a vast museum of historical paintings, and the finest garden in the world, with magnificent fountains, and artificial hills breaking the vista. Sévres, its celebrated porcelain manufactory. And the garden of plants, the most extensive collections of natural history brought together by the labours of Buffon, Daubenton, and Cuvier. There is a large space covered with trees, fountains, and statuary, and surrounded by the Tuileries, the Palais Bourbon, the Hospital of the Invalids—containing Napoleon's tomb, the Military school, the Arc de Triomphe, the Madeleine, and the place Vendôme. Through the middle of this area rolls the beautiful Seine dividing the Champs Elysées and Place de la Concorde on one side from the Champs de Mars on the other. Then the whole city is surrounded by broad promenades with a row of trees on each side. Skirting these trees is a wide pavement for foot passengers.

Between the paved paths is the carriage-way. And beyond the trees are splendid mansions, shops, and theatres. These promenades are the Boulevards of Paris, where all its fashion and beauty assemble every evening. In a much wider circle are other walks of the same kind which constitute the exterior Boulevards.

Such is Paris. Paris, the work-shop of Voltaire and Rousseau, of Pascal and La Fontaine, of Corneille and Racine, of Chateaubriand and Lamartine, how can she be otherwisely than beautiful? She has seen hey days of prosperity, and gloomy nights of adversity; yet she is as graceful as ever though shorn somewhat of the lustre she had gathered by the victories of Marengo and Lodi, of Hohenlinden and Jena, of Wagram and Friedland, and of Austerlitz and other places. How strange are all human events and how sudden are their reverses! I vividly remember to this minute an exclamation by my friend pointing to the chain of forts around this city during a walk in the suburbs, saying "look at those stupendous works which the king has been raising to keep down the Parisians. But what will he do when his own soldiers sympathise with them and turn their heels against himself?" How sage was the remark, and how verified have been the predictions! Because Louis Philippe's Government, with all its good points, was a weak Government. We left Paris after a stay of nearly two months, during which we gathered much material for reflection, and returned to London *via* Amiens, Boulogne, and Folkestone, greatly pleased with the result.

My second tour was to Berlin. I started with the same friend as on the last occasion. Our first stoppage was at Dover. Many objects attracted our notice on the line of road: but the most conspicuous of these was the Shakespearo Cliff, between which and the sea the train had to wind ere it could get to the terminus. At Dover itself we were struck by its celebrated fortifications which might bear some comparison with those of Gibraltar, though they have not like the latter tunnelled galleries in the Rock—the wonder of ages. Like Brighton, Dover is a bathing station. A large gun pointing towards France is called the Queen Anne's pocket-pistol, a very different affair from the devil's tongue of Gibraltar. Crossing over to Ostend we hurried through Belgium passing by Bruges, Ghent, Louvain, Malines, Verviers, and Aix-la-Chapelle to Cologne on the Rhine. Cologne is said to be the den of all European thieves and pick-pockets; and the remark is not misapplied; for in this respect, it beats even London. The great object of comment here is the large Cathedral which has been building for ages, but has not been finished owing to a supposed curse of Satan. In ascending the Rhine from this place the scenery is truly picturesque. It would be as bad to compare this river above Cologne with the Nile below Cairo as it would be to compare the Ganges within its rock

then down the Rhine following our former track. Magdeburg is one of the most strongly built of Prussian fortresses, situated on the Elbe. It has a large population and rich neighbourhood. The Railway from Berlin to the Rhine crosses here the line from Hamburg to Leipsic. Brunswick is apparently a fine town, but we saw little of it from the shortness of our stay. Hanover, the capital of its king, is a very pretty place. A deep, broad canal surrounds the town. The promenades and the palace are handsome; the houses and the people comfortable in appearance. We saw here a grand military procession. From Hanover to Cassel we travelled in a coach. We passed Gottingen at night; so we could not see its university. The intervening country we found full of beautiful and romantic scenes. We had to cross many hills, passes, and rivulets on our way; and, on the road-side, standing crosses were to be seen in considerable numbers, and vast forests of apples and pears loaded to the ground with fruit. The situation of Cassel is highly picturesque. It lies on the brow of a hill continuous with other hills in a circle enclosing in the middle a deep, fertile valley. It has a good square, well-paved streets, handsome houses, and a most magnificent promenade, skirted by rows of trees and leading to the palace a distance of some miles. This walk lying on a high ledge of rock, the view from it is superb: add to this the cool shade and the bracing air, and I will leave you to imagine how pleasant and varied are the thoughts which here fleet through the mind.

Giesen is the seat of a famous university, where Liebig and Bischoff were Professors at the time of our visit. We were highly pleased with the arrangements of the grand chemical laboratory and the anatomical museum.

In the train from Frankfort to Darmstadt a German gentleman of the name of Muller entered our carriage and said that, having observed me in the streets of Frankfort and not knowing how to introduce himself, he had taken this opportunity to have a chat with me about the East. He returned to Frankfort after travelling with us for three stations. The view of Frankfort from the bridge over the Main is very fine. Darmstadt is the capital of the Hesse of that name. We saw here a grand military procession, and the palace which contains a great number of valuable pictures. The museum of natural history has a fair collection, and Professor Kaup, who devotes his whole time to it, shewed us several interesting fossil teeth of the mastodon, elephant, rhinoceros, tapir, &c.

Thus closed my second tour. I have purposely left out a great many things, on which I should have commented were it not that I was afraid of tiring out your patience.

My third tour was to Vienna. This time I had to set out alone; but happening to speak French and German, I experienced no

great difficulty in getting on. I left in a steamer which plies between London and Hamburg for this latter port. On board I made valuable acquaintances, and a Bremen merchant became a particular friend. After three days' sail we sighted Heligoland—a favourite summer residence of sea-bathers; and presently we entered the mouth of the Elbe of which I shall have to speak more hereafter. In a few hours more we landed at Hamburg—a free city of the great Germanic Bund or Confederacy. The friend I have already alluded to here introduced me to a number of students who paid me marked attention and conducted me to the Exchange, the Alster, the Students' Cellars, the Music halls, the King of Denmark's Palace, to Altona, to the Riding School, the Schiessen Garten, and many other curiosities which cannot be named. Here I took the Rail to Berlin where I rejoined my travelling companion of former years. According to a premeditated plan, after revisiting the curiosities of Berlin and its neighbourhood, we pursued our way to Frankfort on the Oder and from thence to Breslau where we made a stay of three days, spending them most agreeably among the pleasant groves, the beautiful walks, the rich preparations of Otto, Purkinje, and Gravenhost, the Museums of Agriculture and Geology, the School of Mechanics, the antique Churches, and the University. It is a remarkable fact that Breslau contains the finest collection of monstrosities; and a great number of its inhabitants are ugly and deformed.

On quitting this town we bent our course towards Dresden passing by Gohlitz, Reichenbach, Bantzen, and many other places on our way. Dresden is the capital of Saxony, and it is neater and more classical than any other city of its own size in the world. Lovely are the heights of its wooded hills, the groves of its Grosser Garten, the Galleries of its master paintings, the Zwinger, the Armoury of its ancient heroes, the retirement of its vast Library, the delights of its music gardens, the promenades of its quiet suburbs, the acting of its excellent theatre, the singing of its fine Opera, and the decorations of its Kreutz Kirche and Royal Palace. But it were vain to attempt a description of the tranquil life of Dresden; it is sweeter than honey, and more attractive than the warbling of the nightingale. Order, beauty, science, arts, and scenery, all equally adorn it. We met here Carus and Reichenbach who were both exceedingly polite and communicative.

This brings me to our ascent of the Elbe. Leaving Dresden in a steamer we went up as far as Obristvi, and thence by an omnibus to Pragau.

Our road lay through what is called the Saxon-Switzerland, and a wilder or more stupendous scenery than we saw here could not be conceived. On each bank of the river rose naked precipices to a giddy height, and at one spot (the Bastyle) stood several lofty

old. The mountain ranges bordering this river, though not so awe-striking as those of the Elbe, were yet sufficiently grand, and at Grein, where they come closer together, the rapidity of the current is fearfully increased. We had a very pleasant time of this trip, and some Austrian nobles on board with us we found to be unusually sociable for their class. We did not land at Linz till late in the afternoon, but we had light enough to go to the Schieser-Platz and then up a hill, at the top of which we found ourselves in a nice little garden with a coffee-house in the centre. The view from this place was one of the grandest and most picturesque that I have ever enjoyed. Vertically below where we stood rolled the Danube. In front and lying in the valley, which extends a long way, was the town of Linz. The course of the river could be seen for many miles meandering through the plain. Opposite to our hill and on the other side of the Danube rose another cliff equally as high. At the edge of the valley and bounding the horizon were seen verdant hills, precipitous rocks, and lofty glaciers, forming a vast and endless chain so far as the eye could judge. And interspersed in the plateau were numerous corn-fields, villages and towns which, by their spires and chimneys, made a ludicrous contrast to nature's sublimity around.

Starting the next morning early we went by Wels to Gmunden, a small town on the bank of the Traun See. We reached it in the midst of many a passing shower and transient glimpses of the sun. It was necessary now to cross this lake in a steam ferry as there was no path through the inaccessible and inhospitable mountains which rose above the clouds and hemmed it in on all sides. But we had not gone forty yards when torrents of rain and peals of thunder came down on us with unearthly vehemence, and the neighbouring peaks, catching up the sound, echoed and re-echoed it at once in a chorus of a thousand voices. The reading of the *Deluge* had not produced the impression which I now felt, and how greatly was the effect enhanced may be considered, when it is added that cataracts and cascades were pouring down the hill sides into the lake with leaps of immeasurable span. At length we got into a coach at the other end of the lake; but as our course still lay along the foot of the hills on the edge of the (river) Traun, we were in imminent danger of being crushed, killed or drowned from the fast descending currents from the hill-tops, charged with heavy logs of timber which the foresters had felled and heaped up in the ravines, in the hope of their coming down with the first shower of rain. An avalanche could not have been more dreadful than the scene we were then traversing; but in the excitement of the moment I forgot all terror and thought only of the mighty spectacle before me, the like of which I might not live to see again. At last the clouds began to move away.

leaving the sun to gild with many colours the summits of the lofty Traunstein, Traunkirche, Sattel, Laken Berg, Schön Berg, and Dachstein, till gradually the whole of the mountains reappeared in the Vista. By the time we reached Ischl all was again calm and dry.

Of Ischl it may be justly said that it is Paradise on earth ; for no words of description will sufficiently unfold its solitary magnificence and picturesque beauty. Surrounded on all sides by snowy mountains, approached in the manner above indicated, intersected by rivulets of transparent water, laid out with perfect taste and appreciation of nature, and frequented by the great and good of all lands, one might really fancy that he had passed the Stygian pool and entered the gate of Heaven. Here there are no brawling scenes, no boisterous mob, no murderer, no thief, no phantom of police, and no hideous crime. Everything is serene and mild, every body is humble and gracious, the air itself is embrosial and balmy. Royalty walks here without a single retinue, woman puts off for the time her gewgaws and hypocrisy, man's pride is softened by the adjacent scenery, and love, peace, wonder and devotion penetrate the hardest soul. Sweet it is to walk by Ischl's murmuring brooks, to saunter among its lonely paths, to clamber up its solitary gorges, to stand under its gigantic waterfalls, and to count the rainbow colours in their spray, to listen to the forest music, and to gaze upon the impressive landscape. How glorious is the view of Dachstein, of Rudolph Berg, of Wank, of Wildenstein with its ruined tower, of Volkenstein, of Wolfgang, of Schaff Berg, of Schwartz Berg, of Welsen Berg, of Rettenstein, of Pernsch, of Schön Berg, of Traunstein, of Weissenbach, and of Mount Calvary ! And how bright the glaciers in the distance ! One must be there, gentlemen, to feel the force of the impression. But our stay was short, and so after a couple of days at this place, we departed for Salzburg on the Salzach.

The road to Salzburg, is romantic and grand. Many a rugged precipice overhangs the vehicle as one threads his way along the gorge between the mountains, until all of a sudden the mighty Schaff Berg, with a vertical cut of 2,000 feet, glares him full in the face. On he goes along the other side of the Wolfgang See which separates him from the last named mountain. He has now to mount a hill before he can get into the next valley, and this affords him an opportunity of beholding a panorama of extreme grandeur, blending together bold barren rocks, green turfy fields, valleys of ice and snow, black dismal clouds, and sweet tranquil lakes. After a short drive he emerges on the Fuschel See, along the high bank of which he courses till he arrives, at its further extremity, at a village called Hof. Here we took some refreshment, as a substitute for dinner, and met some members of the

Imperial family consisting of two parties, each in a carriage. Two more hours' drive brought us to Salzburg. This part of our journey was not so hilly as the last, but from our coach we could see vast rocky mountains at a distance clad in eternal snow. The fortress of Salzburg is built on a rock of great height, and inaccessible except by one side. It is very strong and commanding: and its effect on me was greater than that of Malta, Gibraltar, Edinburgh, Dover, or Magdeburg. The town is small, and, rising behind it, are two or three hills. In the centre of the great square is a fine statue of Mozart. The university is small.

On our journey to Munich we traversed a comparatively level country, but not far from us stood in one uninterrupted range the whole amphitheatre of the Alps, with their rugged pinnacles, valleys of eternal snow, and bleak forests which man's foot has never trod. The Dachstein and Schaff Berg reached us by their shadows long after we had quitted their vicinity; and we crossed the Inn, the Isar, and the field of Hohenlinden ere we reached our destination. I have read Schiller's Robbers and Goethe's Faust; I have recited wild bursts of poetry from the wilderness of Styria; I have admired God's goodness from the shady groves of Hampton Court; I have contemplated nature's bounty from the rising ground of Richmond Park; I have meditated romance from the avenues of the Trossacks by Loch Katrine; I have mourned over man's pride from the tall towers of Windsor Castle; but never did I feel such awe as when I gazed on the memorable heights of Torres Vedras, and on the battle-fields of Waterloo, Leipsic, Jena, Wagram, Austerlitz, and Hohenlinden, remembering especially the thousands of men that expired on them, bringing misery, shame, and degradation to thousands of houses all over Europe. All this in its fullest intensity flashed through my mind as we passed Hohenlinden which Campbell has immortalized in the following well known lines:—

Then shook the hills with thunder riven,
Then rushed the steed to battle driven;
And, volleying like the bolts of heaven,
Furrowed the red artillery.

But redder still these fires shall glow
On Linden's hills of purpled snow;
And bloodier still shall be the flow
Of Iser, rolling rapidly.
'Tis morn! but scarce you level sun
Can pierce the war-cloud rolling dun,
Where furious Frank and fiery Hun
Shout 'round their sulphurous canopy.

The combat deepens : On, ye brave !
Who rush to glory, or the grave !
Wave, Munich ! all th' banners wave !
And charge with all thy chivalry !
Few, few shall part where many meet !
The snow shall be their winding-sheet,
And every turf beneath their feet,
Shall be a soldier's sepulchre !

But I must recount to you another event which occurred during this passage. I have to tell you how dark masses of clouds came hovering together to form a black canopy over our heads ; how they stole from us the meridian sun and the giants of the Alps ; how a dreadful thunderstorm with a pelting shower presently hurst forth with unparalleled fury ; how the world seemed to resound with the reverberations of the thunderbolts ; and how every now and then streaks of lightning illumined in one glow the mighty panorama of the Alps.

At Munich I saw the Glyptothek, the Pinacothek, the frescoes, the vases, the statues, the paintings, the schloss, the university and its museums, the English and other gardens, the theatres, the hospitals, the churches, especially Frauen Kirche, the Professors, and the distant Yungfrau and Rigi of Switzerland as well as the Alps.

On resuming our journey we arrived at Augsburg, where we saw the Rath House with its golden hall, frescoes, and silver pictures, some churches, and the chapel where Martin Luther delivered his confession of faith before Charles V. from a temporary pulpit.

Getting into an Eilwagen we next went to Stutgard. Here after a little rest we proceeded to the Naturalien Sammlung and examined the zoological, paleontological, anatomical, and pathological preparations.

Then we reached Heidelberg on the Neckar, situated in a deep valley, from either side of which rise mountains of tolerable height. On one of these hills is the ruin of the Old castle. We had the good fortune to meet Professor Tiedemann who was so kind as to

Florence, Viterbó, Rome, Naples and the Vesuvius, Leghorn, Genoa, Montpell'ier, Lyons, Orleans, and Brussels. But I was not destined to reap this pleasure. I had to defer my plan of travelling in the country of Avalanches, and in that of Tasso, of Danto, and of Aristosto. For the French Revolution of 1848, breaking out at this time, upset all my anticipations. Louis Philippe became by it a wandering fugitive; Louis Napoleon was called to the helm of state; and insurrectionary movements pervaded more or less the whole of Europe. The Pope was driven from the *Vatican* to seek shelter at Gaeta; Syracuse defied the authority of the Neapolitan King; Sardinia marched her armies into the territory of Austria; Hungary rose in revolt; Bohemia declared for independence; Venice threw off her allegiance to the House of Hapsburg; Vienna fell into the hands of her incensed citizens; Berlin was deluged with civil blood; Switzerland was distracted by factions; and the whole of Germany lapsed into a state of ferment and commotion. Such tumults as these were a sufficient excuse for avoiding the continent. What followed history has recorded. But I will remark that throughout those convulsions I felt a deep and ceaseless interest, not only from my democratic sympathies, but also from the knowledge I possessed of most of the localities where those scenes were enacted. The Chartist row in London, and Smith O'Brien's performances in Ireland, took place also about this time.

Thus compelled to surrender my original project, my fourth tour was devoted to Scotland and to the North of England. I had to travel alone; but I had many letters of introduction for every town I visited, which made it exceedingly profitable and instructive. As in consultation with friends I had predetermined a plan, I will give you at one view the route which I pursued. Commencing with Harrow and Rugby I, first halted at Birmingham and saw its manufactories of guns, bayonets, horse-shoes, iron-bars, pins, pens and jewellery; also the Townhall and the Grammar School. Next I was at Liverpool, where its numerous and well-appointed docks, wharves, ware-houses, judicial courts, mansion house, and handsome churches occupied my attention: and to crown all I was present at the opening ceremony of the Victoria, Stanley, and Bramley docks, and the water-locks of the coal canal to Manchester. Manchester was my third stage where I saw its cotton manufactories, print-works, exchange, clubs, ware-houses, cathedral and infirmary. Then passing by Bolton and Preston I crossed Morecambe Bay from the little town of Fleetwood to Peel-Pier where the train took me up, and, hurrying by Furness and Dalton, deposited me at Broughton. I had to reach the distance from this to Ambleside, leaving on each side scenery of considerable beauty, such as the Oldman and the Conistone and Eastthwaite waters. From Ambleside I first went to Stockgill Force—a pretty water-fall

broken into two at one part by a huge piece of rock. Then I climbed up to the top of Wansfell pike with great trouble and fatigue. Sitting on its summit I enjoyed a most pleasing prospect of the surrounding mountains, lakes, valleys and the sea. The morning which was foggy, soon cleared up. The Coniston old-man, the Wrynose, the Wedderlamb, the Handknot, the Sca-fell, the Bow-fell, the Rydalhead, the Hawkshead, the Langdale pikes, the Tilherthwaite, the Eastthwaite, and the Windermere with its richly decorated banks and beautiful islands were the chief objects of attraction. Next I took a passage in the steamer to Newbybridge. In going down the Windermere the scenery in the direction of Ambleside was grander and grander the further we were away. We could see now all those mountains that we saw from the top of Wansfell pike; and, besides, Helvellyn, Skiddaw, Saddleback, Highseat, Fairfield, Kirkstone, Trautbeckfell, Trautbeck Park, Dawson's Castle, Bowness, Low Wood Inn, the island and ferry Storres, Rawlinson's Nab, and Furnessfells. I witnessed during this trip also a regatta and a wrestling match. My third excursion was to Ulleswater; in this we had to mount Kirkstone Pass, 1,500 feet higher than the sea and where we saw the highest inhabited house in England. The road, which was covered with boulders, is bounded on the right by Wansfell Pike, Trautbeck and High-street, and on the left by Kirkstone. Then it winds round Brother's Watch to the head of Ulleswater at Patterdale. Here we hired a boat for Gow-Barrow Park, and in rowing down the lake passed many a precipitous and rugged mountain. Airyforce, a beautiful waterfall, is the principal curiosity of this Park. On our way back to Ambleside we took the path by Trautbeck Park—a very lovely place indeed. Soon after our return we left for Keswick and passed by Rydal and Grassmere Lakes, Thirlmere, Rydalhead, Elm Craig, Skiddaw, Saddleback, and Bassenthwaite. Keswick is a small town upon Derwentwater, and has two or three hotels and a small church. The lake is only about a mile long. The road from here to Cockermouth lies at first by the side of Derwent and close to Barrowforce, Barrow House, Castle Craig, Bowderstone, Lowdore, Eagle Craig, Green Craig, Borrowdale, and Rossthwaite: then it passes by Seataller, Borrowdale Craig, Grangebridge, Honister Craig, Ew-Craig, Gatesgarthdale and pass, Buttermere, Great Gavel, Green Gavel, High Craig, High Style, Redpike, Milbeck, Runnerdale Knot, Grassmore, Bowfell pike, Scaleforce (a waterfall of 140 feet), Crummock, Scale Hotel, and lastly along the little river called Cocker. From Cockermouth I proceeded by rail to Glasgow, seeing on my way Carlisle, Gretna, Lockerby and Lanark. At Glasgow I visited the College, the Churches, the Infirmary, the Prison, the Lunatic Asylum, a cotton manufactory, and an iron-foundry. I made also an

excursion to Dumbarton, Loch Lomond, Inversnaill, Benlomond, Rob Roy's Cave, Inveraren, Tarbot, Loch Long, and Greenock. After this I made Dunoon by head quarters, and then was at Holy Loch, Loch Fyne, Inverary, and Loch Goyle. On one occasion I was a guest at the launching of a new excursion steamer which I enjoyed very much. The Castle of Inverary contains a large armoury of the former Dukes, and the view from the top of Doniquick hill is exceedingly good. On quitting Dunoon I was conveyed by the Pioneer to Loch Gilthead, then by a second boat through the Crinan canal, at the end of which I embarked on another steamer which ultimately left me at Oban. In this passage I saw Arran, Bute, Ben Cruachan, Duntroon Castle, Isla, Jura, Scarba, Luing, Lunga, Colynsay, and Mull with its mountains. From Oban I took a pleasure trip to Iona and Staffa in the Dolphin. Iona is remarkable for the ruins of a monastery and a great number of ancient tombs: its inhabitants are helplessly indigent—fishing being their chief occupation. Staffa is worthy of notice on account of its basaltic columns and Fingal's cave into which I entered along with other passengers, who, in spite of the waves dashing fearfully under our feet, set up in full chorus "God save the Queen!" This island is used only for cattle grazing, which, by the way, is also the sole employment made of the heathy hills of Scotland and England; the sheep turned out on each being truly astonishing in number. In returning from this excursion we doubled the island of Mull, and saw Gometra, Ulva, Coll, Tirree, Rum, Skye, North and South Uists, Lewes, Harris, Airdnamurchan, Morven, Lismore, &c. On my return to Oban I paid a visit to the Duns'afinage Castle, from which were distinctly visible Loch Etive, Ben-Awe and Ben Cruachan; and on the following day I went up Loch Linnhe, Loch Leven and Balahulish to Glencoe (as far as the King's house,) bounded on one side by Benna-vear and Ossian's Rock, and on the other by Eagles Craigs. Then going back and ascending Loch Eil, I rested for the night at Banavi. In this part of the journey we passed Fort William, Ben Nevis, Glen Nevis, and Inverlochry. The next morning we went up through the docks in the Caledonian Canal, Loch Lochie, and by Fort Augustus to Loch Ness, on which we made another halt to view the fall of Foyers, which is very horrible and wild. Now we sailed straight to Inverness, where I stopped just long enough to see the place, and then resumed my journey by Nairn, Forres, the *blasted heath*, Elgin, and Huntley to Aberdeen. In this drive were seen the Cawder Castle and river, and the field of Culloden. The stone quarries, the bridge of Don, the granite houses, the King's College, and the Marischal College were my principal sights at Aberdeen, and no sooner these were finished, I hurried on by Dunnotar, Montrose, Arbroath, and

schools, the varied scenery, the remains of antiquity, and the geological features of the country, have been ably explained in works which you have perused; and if I had any more remarks to make they would refer chiefly to personal adventures, which are not likely to interest strangers.*

In these travels I have spoken with royalty, nobility, and men of learning, but never did I feel my nature degraded by an unseemly assumption of haughtiness on their part. Pride is unamiable, whoever may be its possessor. It is as repulsive in a King, as it is ridiculous in an upstart. Yet how many there are, who, rising to wealth from poverty, forget their previous condition, and grow insolent, vain, and conceited in their behaviour towards others. The coarser and the more low-born the man, the uglier and more impertinent is his presumption. But the simplest way to deal with such a one is to hold no intercourse with him as far as avoidable.

My main object, however, being to point out in general terms the advantages to be gained from a visit to England, I abstain from all further details, trusting that I have done enough to establish my position. Let me now ask you, gentlemen, if there be reason to be dissatisfied that you must go to England before you can compete for any of the covenanted appointments. True, it is unfair that you should be obliged to incur an expenditure heavier than that of the European candidates. But are there no palliating circumstances? Is not the gain a rich reward for your troubles? And even if you were to fail at the examination, would you not have your minds stored with a harvest of useful knowledge? I pray you to know, gentlemen, that even if you are successful you will have many a disappointment on your return to India. You will have to be stoical in your resolutions and laconic in your conversations. You must shew that the love of lucre is not your sole principle of action. On the contrary it will be necessary for you to exhibit the fire of knowledge and the sense of duty, which alone are our proper guides to the temple of glory and to the shrine of immortality. Gentlemen, my task is done. And that God may prosper us in the new field of exertion which is open to our countrymen is, and will be, my sincere and earnest prayer.

* Since the above was written the whole of North Germany has passed under the military despotism of Prussia, and South Germany is evidently awaiting a similar fate. Italy, too, from Lombardy and Venetia to Sicily, has become united under one national king, Rome alone excepted, the subjection of which is only a question of time.

LECTURE IV.

A DEFENCE OF NATIVE EDUCATION IN INDIA DURING THE SEPOY MUTINIES OF 1857-58.

8th July, 1858.

MR. PRESIDENT AND GENTLEMEN,—

I have to apologise for presuming to read to you the discourse of this evening after the able and distinguished gentlemen who have addressed this Society on former occasions.

But while the question of education of the people of India is engaging the attention of many English politicians, I trust I shall be excused for bringing to the notice of this meeting a few facts connected with that subject.

The Lieutenant Governor of Bengal has stated in his speech at the late distribution of Prizes to students of the Medical College, that he was firmly convinced that education was the surest means of securing the fidelity of the subject to the Sovereign, and he quoted statistics to prove the truth of this doctrine as applied to India even in her present troubles.

There are others, however, who think differently, and are inclined to believe that education does more harm than good to British interests in this country.

It will be our duty to examine dispassionately both these opinions, and to determine how far they are supported by facts.

But before venturing on a topic of so much controversy, it may not be uninteresting to discuss briefly the aim and scope of education.

Education may be generally defined to be the cultivation of the mind in relation to the laws of external nature and of our own consciousness. Instruction is one of its branches, but not the whole object. The drawing out and disciplining of the faculties of the mind for the methodical pursuit of knowledge may be said to constitute the great aim of education. Education stops with the school. Instruction must continue through life as new facts perpetually develop themselves. Instruction alone may produce mechanical imitators, but it does not make great men. Education is based on Instruction, yet it is something more than Instruction.

A common operative may be taught how to construct the several parts of a steam engine; yet he may remain totally ignorant of the physical laws which regulate the generation and

power of steam. A carpenter is not necessarily a shipwright, though ships cannot be built without carpenters. An ordinary soldier fights because it is his profession without any knowledge of the plan of battle. Now, in these three instances the engineer, the shipwright and the officer are the men who plan and direct their operations; the operative, the carpenter and the common soldier being but mere tools in their hands, whose business is strictly mechanical, and who understand nothing whatever of the fitness or unfitness of the plans.

Every labourer, free or bond, must receive a certain kind of instruction to fit him for his duties however humble they may be. Education is a result of civilization and the surest sign of human progress. Instruction teaches the hand, the eye, the ear, the tongue and the memory. Education strengthens and exercises the understanding. Instruction, without education, is limited and partial. Instruction, combined with education, may be unceasing, unlimited and progressive.

The aim of education then is not merely to make the mind acquainted with natural phenomena, but also the laws which regulate them, and the relation between cause and effect.

To think, to reason and to judge, are attributes common alike to all minds; but the measure of thought, reasoning and judgment corresponds to the range of knowledge possessed by each. The savage thinks it necessary to hunt because he knows of no other way of obtaining his food. The compositor arranges his type according to the copy set before him without any very clear perception of the meaning of his work. But the modern judge must understand the case submitted to him in all its hearings both immediate and remote, discriminate between facts and assertions, weigh the evidence according to its value, review all the circumstances connected with it, and then pass sentence after the most mature consideration.

In each of these instances, thought, reasoning and judgment are alike involved, the difference between them being a difference of degree. The savage and the compositor have a smaller range of thought because their knowledge is more limited than that of the modern judge.

The common mechanic and the educated lawyer are each useful in the particular profession to which they are respectively brought up. But let us reverse the picture and set the mechanic to perform the functions of the judge. He is perfectly bewildered by the novelty of his situation and the multitude of facts and evidence laid before him, which he does not understand. Arbitrary will has regulated his past life, and arbitrary will guides him still. He orders a man to be hanged or transported with as much disregard of the strict matter of law, as he would change his shoes.

To blame such a man for errors of judgment is to forget his ignorance and want of fitness for the post to which he could be elevated merely by some accidental circumstances.

This is not, however, altogether an imaginary case. Such things do occur sometimes in the most civilized communities. Social convulsions are their ordinary parents. While they last the reign of terror prevails. But sooner or later the good sense of mankind discovers its mistakes and puts a stop to their further continuance. Prolonged oppression, pent up passions, a blind spirit of fanaticism, and religious phrensy account for the violence and fury with which such outbreaks are commonly attended, and in the anarchy which ensues the most impudent, turbulent and daring men are suffered to usurp the arms of authority, and to rush headlong in their precipitate course of folly and wickedness. Righteousness and justice return at length when the eyes of the nation are properly opened! But in the meantime what a vast amount of ruin, desolation and misery has been inflicted on society! What untold acts of cruelty have not been perpetrated under the cloak of fancied liberty! And how wofully the rights of property have been disturbed!

What else would prevent these fearful scenes more than education of the masses, so that they might learn the distinction between right and wrong, and freedom and licentiousness?

To teach how to restrain the passions and honor good principles ought to be an essential point in all schemes of education. Special training, without this, is comparatively of minor importance; for alone it never can achieve true happiness. The former is unselfish, tending to public as well as private contentment. The latter is selfish and designed for the personal benefit of the individual. A sound system of education should include them both, so that while the moral principles are duly strengthened, special pursuits may be followed as a means of livelihood.

Money is, no doubt, an object of considerable importance, and it may be obtained by special pursuits. But education having in view merely the accomplishment of this end is defective education, and must be distinguished from that which makes the gentleman—the man of good principles, refined taste, and delicate sensibilities.

A liberal education can produce but unmixed good in every sense. It does no harm to a man, nor to any body else, to be initiated into a knowledge of his moral and social obligations as well as of the law of matter. On the contrary it exalts him above the common herd, and implants in his heart a love for his Creator and for his species without distinction of colour or creed. It makes him rejoice at the happiness of others, and sympathise with them in their sorrows and afflictions.

An uneducated man, on the other hand, brought up to daily toil, has his thoughts continually directed to himself, is utterly insen-

sible of the feelings of others, and shows therefore no pity in inflicting pain, or pleasure in bestowing happiness. His actions assimilate him more to a brute than to a rational being; for he lives from the hand to the mouth, and his ideas are limited to his daily wants.

Those do well who set a high value on education as applied to themselves; but those do better still who appreciate its blessings in others as well as in themselves.

The educated mind acts like a mirror reflecting its own light upon all who come within its range.

The ignorant mind is at perpetual war within and without itself.

The educated mind submits to the necessity of labour without a murmur.

The ignorant mind repels that necessity as long as it dore.

The educated mind does its work with an intelligent consciousness.

The ignorant mind does the same in vacant sullenness.

The educated mind thinks for itself in the regulation of its conduct.

The ignorant mind requires to be led by the influence of others.

The educated mind is open to conviction.

The ignorant mind adheres obstinately to first impressions.

The educated mind will listen to explanations.

The ignorant mind will be persuaded only under the pressure of fear.

The educated mind abides by law because it appreciates its value.

The ignorant mind submits to law because it fears its penalties.

Viewing merely from the point of education, we may divide the condition of man into three: viz.—

1st, of Ignorance.

2nd, of Imitation.

3rd, of Education properly so-called.

Under the first head we shall place those houseless savages who have no written language, and who are unacquainted with agriculture and the arts.

Under the second we shall include all who are mere mechanical imitators, and do things because they have seen others do them, without troubling themselves to question their reasons or to improve or alter them in any way.

Under the third we shall speak of those who have undergone an intellectual and moral culture, and are, in the broadest sense of the term, educated men.

The number of houseless savages is in our time growing gradually smaller, being confined chiefly to the mountainous regions of

Asia, America, Africa and the South Sea Islands. These are the barbarians of our age.

Mere mechanical imitators exist no where alone as a nation without there being at the same time some educated minds. Wherever the imitative arts have been introduced some amount of moral and intellectual education has found its way. The countrymen of Menu, Confucius, Zoroaster and Mahomet cannot be said to be mere imitators. Philosophy, literature, and the sciences and arts are not unknown to them. The difference between them and the nations of modern Europe is a difference of degree, and number. At the present day there is more knowledge and a larger number of educated minds among a given number of persons of the latter than of the former; and hence the comparative designations of civilized and semi-civilized races. These terms imply simply an abstract truth as applied to the aggregate nationalities. When we descend, however, from the concrete to the particular, the difference by no means appears to be so great as it would at first sight. In the lower orders of society we discover the same general ignorance and industrial occupations both in the civilized and the so-called semi-civilized nations. In the middle classes there is the same eagerness for information everywhere as a means of wealth; and in the higher the same indolence and love of ease.

It is in specialities and individuals that the superiority of the civilized over the semi-barbarous nations is originally founded. Out of thousands of spinners in the civilized world one man, perhaps, finds out an improved mode of spinning, and he immediately publishes it for the benefit of his countrymen. Out of thousands of mechanics some one discovers the wonderful power of steam, and he employs his ingenuity to adapt it to a machinery, and to instruct his generation how to drive ships through the water and carriages on land without animal labour and in spite of the capricious elements. Out of thousands of men of science one man of genius devotes his whole time to the study of electricity, and points out its practical applications to the purposes of daily life. And in this way discoveries are made of the highest importance to mankind by a few earnest individuals, which, being published, become at once the property of the nation, and are taught at every school throughout the civilized world. Hence many minds which were originally on a par become unequal from an inequality of education. While reading, writing and arithmetic form the principal items of study with an orthodox Hindu, the great truths of physical and moral science and history become the subject of every day contemplation with the young European gentleman.

There is no wonder then that there should be such a mighty difference between an ordinary European and an ordinary as-

tive of this country under the present circumstances. That this difference can be swept away by education has been proved over and over again. We may take it for granted, then, that the ordinary men of India would be on a par with the ordinary men of any other country provided they were similarly educated.

India has not furnished in modern times any very extraordinary men of science. Nor did Europe furnish one for several centuries after the extinction of her old nationalities and civilization. That India will never produce great men of science because she has not done so for a long time, is therefore a proposition which cannot be maintained. Education has already made a great stride in this country within a very few years. What it may effect hereafter is not perhaps so easy to guess. But that it will do good and dispel the darkness which overshadows this land requires no wonderful foresight to anticipate.

Now I think we may profitably occupy a few moments in taking a cursory review of the present state of Education in India. That great subject divides itself into three distinct systems, as it is conducted according to the Hindu, Mahomedan or European plan. The first of these we shall call the Brahminical system, because owing to the restrictions of caste it is confined mainly to the order of Brahmins. Under this system reading, writing and arithmetic are taught from a very early life, and in the majority of cases the education is supposed to be complete by the age of twelve. This enables them to write ordinary correspondence and simple documents and to keep accounts, and they desire no more. The few that wish to be more learned now betake themselves to the study of Sanscrit and religious books, an occupation in which they frequently spend the whole life with no opportunity of amassing worldly riches. This may be a very praiseworthy exercise of self-denial, but the philosophy it inculcates is a verbose and distorted philosophy, which consumes itself in its study and leads to no practical results. The ordinary trades constitute with the Hindus so many castes, and they are pursued from father to son without any education and with very little competition.

The Mahomedan system of education, though hampered by no distinctions of caste, is nevertheless as defective as the Hindu. In this school lads are made to learn by rote voluminous compositions, and these are mostly books of fable or of a dreamy, morbid philosophy. The few that aspire to more than ordinary knowledge, have that knowledge consist almost exclusively of an acquaintance with the Koran—the repository of Mussulman Law and Faith. The trades are as ignorant as the Hindu beyond their immediate affairs, though not formed into castes.

The modern or European system has been introduced into this country only within the present century. It hardly numbers yet

forty years of existence. It may be divided into mechanical and liberal education, or education to make the tradesman and education to form the gentleman. This is perhaps a novel way of putting this question; nevertheless it is the right way, inasmuch as it agrees with things as they are.

By mechanical I mean that kind of education which is bestowed on the recipient without any disinterested motive in the giver. It is the lowest species of education which is forced on India by her connection with England; and yet it is a most useful one. The education I here allude to is the education of the workman. The working men under the Europeans in India are all natives who have to be trained to the work before they can make themselves serviceable. These men must be employed in every undertaking, small or great. The result is that after some years' practice they became sufficiently confident of their skill to set up shops on their own accounts. Thus it is that we have now in Calcutta native cabinet-makers, engravers, gilders, printers, gunsmiths, watchmakers, coachbuilders, architects, saddlers, milliners, &c., who have learnt their trades under European masters.

This in itself is a great benefit, and it is one which is destined to augment day by day the longer and larger the intercourse between Europeans and natives. It is the interest of the former to have skilled labourers for their undertakings; and it is the interest of the latter to improve themselves as fast as possible, the sooner to be able to set themselves up in independent business. The demand for native industry created by the construction of Railways and by the occupations of the planters, merchants and tradesmen is already operating in a very beneficial way upon the commoner orders of natives; and this is more likely to increase than diminish with the progress of time. The wages of labour have already advanced to double and triple of what they were only a few years ago; and it is probable they will be higher still a short time hence when the various improvements set on foot will have more completely developed themselves. This sort of education is therefore progressive and inevitable, and it can no more be stopped than the tide of civilization with which it identifies itself.

But it is that kind of instruction which teaches the senses, leaving the understanding perfectly unenlightened as to everything else, and the passions their habitual way. This is then what we would call partial education, the owner of which may be skilful in special pursuits, but yet remain exposed to the evil influences of designing men who have their own purposes to serve.

The liberal education on the European model is that which is intended to be given in the modern schools.

There are several classes of schools employed for this purpose, viz., the public and private, and the English and Vernacular.

: Before the breaking out of the present mutiny the number of schools in the three Presidencies was pretty large, though far from adequate to the requirements of the millions. This formidable outbreak has unhappily in some places rudely interfered with the prosecution of their benevolent work ; but, when the insurrection has been thoroughly crushed out, it is to be hoped that it will again proceed with accelerated speed, and root out for ever the seeds of future rebellion.

This education consists for the most part of instruction in reading, writing and arithmetic, as well as of elementary lessons on mathematics, geography, history, moral and natural philosophy, and poetry. With the greater number of the pupils the sole object in entering school is to pick up a little smattering of English and to write a good hand, so as to be able to turn copyists or writers as early as practicable. Out of the few who linger at their studies for a longer period many are actuated by a pure spirit of emulation. Very few indeed continue their education from a true love of knowledge.

This is not a state of things, however, which is irremediable. It would have been unreasonable to have expected more than this at the commencement. Time works marvellous changes. Already the light of science is beginning to produce its purifying and elevating effects. Already the little community of educated natives is heaving with swelling thoughts and noble aspirations. Already the mighty structure of superstition is crumbling to the dust under their firm and regular tramp. Already the champions of darkness have taken the alarm, and are waging a mortal struggle against civilization ; but the votaries of knowledge have caught them by their throats, and they may shake with wrath as wildly as they please, they will never put back by one step the onward march of human improvement. The battle is as good as won.

We have only to point to the excellent native newspapers and learned associations in illustration of this opinion. We might single out the marriage of Hindu widows, which has now become an established fact, to encourage us to hope. There is no doubt then that the giant which has defied so long the unaided efforts of our countrymen at self-improvement, is fast melting away under the iron grasp of time and European learning, and we would all rejoice to see its utter annihilation.

We come now to that part of the subject with the announcement of which we opened this discourse, *viz.*, the desirability or otherwise of giving education to the people of India.

The Lieutenant-Governor of Bengal has decided in favour of native education, and he deserves our best thanks for that decision. He has condemned in the strongest terms the barbarous

acts of cruelty and murder indiscriminately committed on men, women and children by the savage mutineers; and we heartily coincide in that condemnation. We hate those crimes because they are abhorrent to humanity. We hate their perpetrators because of those crimes, and because they claim consanguinity with us; we hate them still more because they would have smothered the little spark which has shed so much happiness on ourselves before it could be fanned into a broad and steady flame to enlighten the masses of our countrymen.

It is not easy to quote statistics on any subject concerning the people of India; and therefore it is obviously difficult to say how many of them educated on the European model have joined in the mutiny.

The Lieutenant-Governor has solved this question for us as regards the ex-students of the Calcutta Medical College. Out of the large body of Native Doctors and Sub-Assistant Surgeons who have issued from this institution, only two or three have been proved to have actually joined the ranks of rebellion, although the vast majority of them were exposed to the same temptations as the sepoys of their regiments.

This fact itself speaks volumes in support of the advocates of native education. When we couple with it the notorious circumstance that the mutineers have destroyed wherever they could any natives whom they suspected not only of knowing English, but also of being infected by intercourse with Europeans, down to domestic servants, the true state of the case becomes still more apparent. The war which has been raging during the last fourteen months is not then the war of Europeans against natives, but that of ignorance and fanaticism against knowledge and religious toleration—a war in which the educated native has as great a stake as any European in this country.

We are now prepared to take into consideration the views of the opponents of native education; and here I am willing to make the largest allowance for the lacerated feelings of those who have lost friends and relatives during the terrible mutinies. We blame none for the very natural errors of judgment they have committed under the momentary excitement of a bitter grief. It is opinions, not men, we have to deal with. Upon what grounds then is founded the opposition to native education? These may be briefly summed up as follows:—

- 1st. An apprehension of danger to established authority from the general enlightenment of a subject race.
- 2nd. The fear of a gradual diminution of the number of situations held by Europeans.
- 3rd. An apprehension of the evils of antagonism of race from a consciousness of power possessed by natives.

4th. A supposed inherent incorrigible viciousness of the native character,

5th. A supposed absence of gratitude in the native heart.

6th. A natural ferocity of disposition of the natives.

7th. The physical, intellectual and moral inferiority of the natives as a general rule compared to Europeans.

8th. A diminished respect for European talent as a result of native education.

9th. The religious fanaticism of the people.

10th. A hatred of foreigners and foreign institutions as a feature of the native mind.

11th. The probability of the interests of the British European subjects being injured by native education.

Answer 1st.

The apprehension of danger to established authority from a general diffusion of knowledge is a proposition which carries within it its own condemnation. Why should a Government be afraid of the opinion of its subjects if it be founded on justice and honesty? It is only when these essential attributes are wanting that a Government fears to open the eyes of its own people, whereas in the opposite case its stability and power increase in direct ratio with their education and material advancement. A progressive Government has no need to dread the light of knowledge; on the contrary it is its duty to encourage it, so that its own motives and actions may be duly appreciated. A Government founded on violence and fraud would have much to apprehend in a similar situation; but we cannot believe that the opponents of native education have any such opinion of the British Indian Government when they advise the abandonment of public instruction.

Answer 2nd.

The fear of a gradual diminution of the number of situations held by Europeans in the country can be entertained only by the shallowest minds. The demand for European skill is too great to leave room for any such anxiety, and this is fully attested by the excessive wages it easily obtains. The Railway and other great undertakings would be only too glad to employ Europeans alone if they could make that pay; but the impossibility of their standing the climate and the higher scales of remuneration, are difficulties which must always be a serious obstacle to their extensive employment. Even under the Government a far larger number of Europeans are required than now engaged for the efficient working of the various departments; but with their present salaries it is impossible to increase their number because the finances of the State would not bear it; while if the salaries were much reduced it is feared the requisite qualifications could

become judges and magistrates, and in these capacities favour their own countrymen. Now, could not the same objection be urged against Europeans? But let us carry out this argument to its utmost natural consequences. What have we then? This, that no native is to be a judge or magistrate because he is likely to sympathise with the hundred and eighty millions of his countrymen; but Europeans alone are to be judges and magistrates, for they will not sympathise with the people of the country to the prejudice of the few thousands of Europeans in India.

This sort of sophistry is a most monstrous injustice, which would not be tolerated even in the Slave States of America, for it is a return to the worst form of caste. The legitimate inference from all this is, that the hundred and eighty millions of blacks are to work for the exclusive benefit of a handful of white men, and worship them more obsequiously than they ever did the Brahmins.

When God made some men dark and other men fair, He had a great purpose to serve. He did not make climates for men, but men for climates. The inhabitants of the Tropics are black, because that region is intended for their habitation. The inhabitants of the colder latitudes are white because the sun is less powerful in them and does not tan the skin. Hence when fair men settle within the Tropics their descendants grow more and more coloured from the action of the solar heat with every succeeding generation; nay, it is observable even in individuals of a fair people who have lived long in a hot country. In like manner the *proteus*, which dwells in caves, when exposed to the sun, becomes coloured, losing its former translucency of surface. The pride of colour, therefore, is as foolish in man as it would be in that humble creature.

But is truth what would be our present condition if this antagonism of race had really existed? Why, every European would have been suspecting every native as constantly trying to destroy him, so that no natives could be employed even as domestic servants through fear of their poisoning him. Now, in sober earnestness, does this state of things obtain anywhere in India? Are not Europeans and natives doing together business of every kind without any such suspicions? Miserable indeed would be the life of that man who entertained these gloomy fears, and yet freely mixed himself among his bitterest enemies.

Answer 4th.

It has been asked what is the good of educating the natives of India if the inherent viciousness of their character remains unchanged. It will be seen that in this question two things are taken for granted—1stly, that every native is naturally vicious; and 2ndly, that this trait in his character is irremediable by education.

This is a most broad and bold assertion. Consequently it behoves us to examine the grounds on which it is based.

Are all the people of this country naturally vicious? Several writers of eminence have answered this proposition in the affirmative, and so *a fortiori* it might be supposed that there must be some strong reason for that opinion. But when we look more narrowly into facts, we find that the authors who have written thus are all men who could have known little of native society. They have grounded their statements on the reports of the Law Courts, where in all countries chicanery, corruption, perjury, forgery and violence are brought into light. Of the private life and morality of our countrymen they were utter strangers; otherwise they would not have involved in one sweeping charge an entire race. They would have learnt that the perpetration of those crimes was the exception and not the rule, and that the respectable natives looked upon them with as much horror as the rest of mankind. For the *Shastras* teach that if a man take bribes, or tell a lie, or commit perjury, forgery or murder, he sells the soul of his ancestors to the spirits of Hell.

This charge therefore falls to the ground, not only because it is opposed to the doctrines of philosophy, but also to our history.

The assumption that any portion of the human species is incapable of improvement, is so entirely gratuitous that it may be fairly challenged; but the notion that the native India is so, outrages all past experience and the common sense of the world. This is no longer a matter of speculation, for the result of the last 38 years has already proved what a vast reformation is taking place in the character of the rising generation of Bengal. No one at all acquainted with the educated Bengallees brought up in the English schools, can deny that they possess a considerable amount of truthfulness; and if they are not as yet equal in this respect to the more civilized nations of Europe, it is not too much to predict that they will be so in course of time. There are already many individuals among them who for integrity of character and intellectual excellence may be compared to the best men of any country in the world.

That as corruption has prevailed at one time so it must prevail through all times is a dogma hardly less untenable. Even so late as the reign of Queen Anne, we are told by the historian, corruption was rampant among the highest English statesmen. But is that any reason to presume that the English statesmen are so unprincipled at the present time? If not, then why should we declaim that the present generation of India is corrupt, so must all her future generations be in spite of education and every effort at moral amelioration?

The doctrine of ineradicable moral vice is consequently founded upon insufficient data, and would not be entertained except by the most careless and superficial minds under the influence of diseased feelings and angry passions. I have no doubt however, that when in calmer moments the same persons come to reflect seriously upon it, they would see the propriety of our view.

Answer 5th.

It has been laid to the charge of the people of this country that they have no sense of gratitude for benefits received. It has been said that do what you would, they will never be thankful for it, nor consider themselves under any obligations to you for your kindness. This would certainly be a very great failing if it were true. Plausible reasons have been adduced from the late mutinies to prove its truth, inasmuch as in several instances the sepoys have murdered their European benefactors. Here we must pause before we give our unqualified assent to this very grave charge. We do not doubt that the sepoys have murdered several of their benefactors and that in this they acted like fiends. But is it nothing in weighing this point to take into consideration the instances which loaded them on to this dreadful deed? Must we forget that, when they were acting under the excitement of a blind and fanatical impulse? And are there on record any instances of such barbarous conduct in civilized Europe where men have been put to death under corresponding circumstances? It is often said, that the Crusades and St. Bartholomew's day? If so, then we should look upon these doings in the light of exceptional cases, and not as the rule.

That the people of India are as alive to feelings of gratitude as any other nation requires no elaborate demonstration. It may be seen in their every day life, and it is only those who are blinded by prejudice or culpable ignorance who disbelieve it.

Answer 6th.

Nothing is more mistaken than the idea that the natives of India are naturally disposed to be cruel. This has been attempted to be proved by a reference to some of their gross religious institutions, and by the existence of the practice of torture. But the cruel Hindu rites are already in a fair way of suppression, and will in a few years more, no doubt, number with the past. However, they are no more inhuman than the old Druidical rites, and as these have left behind no permanent tendency to cruelty in the present people of England, so those too may be presumed to be as unlikely to stamp for ever the moral character of the Hindus.

Torture was common throughout Europe during the middle ages, though now it no longer exists. It has vanished like a dream before the solid march of civilization, and will similarly disappear from this country under the irresistible force of the same cause.

But it is an error to think that in ordinary circumstances the natives are more disposed to cruelty than other nations. On the contrary they are quiet, living and generous; and their piety and hospitality are a bye-word among all nations of the world.

Answer 7th.

The physical, intellectual and moral inferiority of the natives as compared to Europeans is an argument which might have been used two centuries ago to impose on the ignorant and credulous men of that time; but to appeal to it in the latter half of the nineteenth century, in defiance of facts and experience, for the abandonment of education, is a conduct as foolish as it is opposed to every well-cherished principle of the modern age.

In physical development the greatest variety prevails everywhere, and so we find it among the people of India. As a general rule, the natives of the plains are less hardy than those of the mountains. The brave Sikhs, Rājputs, Mahrattas and Pathans are perhaps as good in this respect as the inhabitants of many European countries; while the Bengallees, hardly inferior to any in point of intelligence, have a feeble physical frame.

As an abstract proposition that the present actual intellectual development of the European nations is far higher than that of the people of Hindustan I am not prepared to deny; but the inference that because it is so, therefore the capacity for intellectual culture is greater in the European than in the native, is a conclusion not warranted by facts. If there had been no native of this country whose intellectual powers had improved by education commensurately with those of a European under equal conditions, there might have been some reason in that hypothesis, unjust as it is; but, when individuals can be pointed out whose intellectual gifts are in no way inferior to those of any Europeans with corresponding opportunities for education, the objection on this score loses its force.

The principles of morality are not so invariable as to enable us to judge of all nations by a common definite standard. What may be applicable to the social system of one may not be so to that of another. Whence this difference? I think we can answer this question by referring to the source of all morality. Morality is that standard of excellence which is consonant with the laws of God and man. The laws of God are understood by each nation according to the particular dictates of its religion. The laws of man are those which have the approbation of Society in regulating the conduct of one person towards another, and which vary with the social organization under which he lives.

There are then Divine and Social laws; and as Religion and Society differ in different countries, so must the standard of morality.

Thus bigamy would be punished as a crime in England; while

polygamy is not only unpunishable, but has also the sanction of the Civil law of India. The Brahmin loses his caste by eating beef, and the Mahomedan by eating pork; while the Christian feels no repugnance to either.

But there are certain virtues which are common to all nations more or less. These are honesty, candour, truthfulness, justice, mercy, charity, hospitality, gratitude, love and reverence. They exist in the breast of the native as well as anywhere else, though the manner of their manifestation may be modified by the principles of religion and the social condition of the people.

Would it be fair then to complain that what Christianity and a long age of civilization have effected in Europe, has not been done in India by other religions and a different state of intellectual illumination? Clearly not, until education has been more liberally spread among the people, and a better code of laws provided for their social system.

Answer 8th.

It has been objected that if the natives are educated their respect for European talent would undergo a diminution. This would be a real misfortune if the world were to stand still in the meantime. But inasmuch as every Society is progressive it is an evil scarcely to be regretted. It is not however without its parallels in interests which more nearly concern mankind. Does not the parent run the same risk by educating his children? Is not one generation liable to be surpassed by its immediate successor? And do we repine that our progeny will be cleverer and more fortunate than ourselves? On the contrary do we not rejoice at their success and good fortune? The intellectual is an open race, in which all may join who have sufficient spirit and application. There is room enough for everybody. The world is not yet so narrow that any need be excluded from it. When that is the case it will be the time then to look about ourselves and devise what we should do next. Meanwhile let us hope that no harm can result from the encouragement of education on all sides, and a better acquaintance with God and his handiwork.

Answer 9th.

The religious fanaticism of the people has been urged as an invincible obstacle to their education. This is simply untrue, inasmuch as thousands of native gentlemen willingly give their children an English education. I do not doubt that in some places difficulties have been met with in carrying on the work of education, but then those are not such that they may not be overcome by tact and judgment. One would have thought that the history of human dissection and female education in Bengal would have set that question at rest. So much

is at all events certain that the more the people of this country are enlightened the less bigoted will they grow.

Answer 10th.

A hatred of foreigners and foreign institutions has been quoted as a disqualification of the native. But may I be permitted to ask if this be not a disqualification in which every nation partakes more or less? What is patriotism, but the love of one's own country and its institutions? Well then, it is a love of something a man knows, and a dislike of something he does not know. Now, prove the superiority of the something he did not know, and you will find the Hindu or Mussulman quite as ready to appreciate it as any other men. Do we not see this in every walk of life? Do not the natives go to Europeans when they want good carriages, well-built houses, steamers, railways, and electric telegraphs? Is there a hatred of foreigners displayed in any of these things? Why, then, should we assume for granted what does not exist?

There is one respect in which the native does not receive with open arms his European brethren, i.e. into domestic relationship. But then that is precisely what his religion forbids, and has therefore nothing whatever to do with any hatred of foreigners or foreign institutions. Divest him of this excuse, and he will be even with the Christian or any other religionist. Till then it is decidedly wrong to blame him for what his conscience will not admit of his doing.

Answer 11th.

The cry that if you educate the natives you injure the interests of the British settlers and merchants has already been answered in disposing of the preceding objections. It is a most dangerous and ignorant outcry opposed to all rules of logic and political economy. It is selfish, short-sighted, carnal, unjust and impious: nay more, it is suicidal. Settlers indeed! Do you, I would ask the opponents of native education, call those settlers who come out to India for a few years and then return home as soon as they have made enough of money? And then, what may be the number of those settlers? Would you have them alone as the consumers of British manufactures to the exclusion of nearly two hundred millions of the native population of this country? If you would not, why do you permit such fallacy? Why not acknowledge at once that all Europeans in India, not in the Service of Government, are more or less merchants? Why are you afraid of the spread of education, if that education bring you more and better customers, and give work to your looms and artisans? Is not that enough? Besides, is it not your clear duty as Christians to bless and be blessed? This, gentlemen, I firmly believe, and believing it, let us pray that God Almighty

would give us strength to bear meekly our present calamities, and bring us out of them chastened in spirit and resolved to do good by our fellowmen.

Having replied to the above objections, we may gather from the foregoing facts the following inferences, *viz.* :—

1st.—That education recommends itself on its own merits.

2nd.—That education is the best preparation for the business of common life.

3rd.—That education and national prosperity are correlative and mutually dependent.

4th.—That education is the surest safe-guard of an enlightened Government.

5th.—That public education is the best commentary on sound Legislation.

6th.—That education is the best mediator between reason and the turmoil of passions.

7th.—That education is the most effectual remedy for deep-rooted prejudices, moral vice, and degrading superstitions.

8th.—That education is the only means of creating an intellectual commonwealth of all nations.

9th.—That education alone can establish a community of sentiments between Europeans and natives.

10th.—That education, properly conducted, can never lead to harm, while it is of incalculable benefit to the interests of mankind.

11th.—That, therefore, inferentially native education in India is not only desirable but absolutely indispensable to the permanent prosperity of the country and stability of its Government.

12th.—And that to the accomplishment of all this there are no insuperable difficulties.

With this, gentlemen, I shall conclude for the present. I am fully aware of the imperfect manner in which I have performed my task. Nevertheless I feel deeply grateful for the honor you have done me in listening to this paper if it have only the effect of awakening thought and reflection on a subject so dear to us all as native education. And I trust the discussion which is about to follow will fill up the numerous deficiencies which I could not supply. Of this, however, we may rest assured that, whatever may be the opinions of individuals and whatever our own shortcomings, the people of England will not suffer us to remain in a state of moral degradation, nor cease to send us messages of knowledge and eternal truth.

LECTURE V.

NATIVE EDUCATION CONSIDERED IN A PSYCHOLOGICAL POINT OF VIEW.

July 18th, 1861.

GENTLEMEN,—

MATTER and force are the two great conditions of the universe, both equally indestructible, though known to us only in their manifestations through destructible bodies. Matter and force pervade all nature, and are co-extensive with space and time. Matter is said to consist of atoms which are understood to have shape, size, weight, density, elasticity, and physical and chemical affinities. Matter admits of many varieties. Matter in mass is called body. Bodies are either elementary or compound. Thus gold is an elementary body, the particles of which may be dissolved or combined with other elements, but can never be destroyed; a plant is a compound body, the particles of which are let loose by decomposition, resolved into their original elements, or grouped into new combinations. Bodies, being mere mechanical dispositions of matter, are constantly liable to be obliterated; thus bone and wood are destroyed by fire, although the materials of which they are composed assume only other shapes.

Force, in nature, shows itself under a variety of forms. It is either organic or inorganic. Light, heat, electricity, magnetism and physical and chemical attractions are reckoned as inorganic forces: and the souls of plants and animals, as organic forces, by virtue of which their complex bodies are gradually perfected and fitted for the higher phenomena of life.

Life has been defined to be an aggregate of changes—a vital resistance to death. To me, however, it is the state of being which results from the union of body and soul. That union dates its origin from the first moment of conception and terminates only by dissolution in death. Therefore the space which intervenes between those two events measures the duration of life, and the phenomena belonging to it are known as living phenomena. We may represent this relationship thus—

Body } Life
Soul }

Life is here not merely the connecting link but a new product, of which, however, we can have no adequate idea independent of this connexion.

The body is the mortal and material organ through which the actions of life are necessarily manifested under the government of some invisible power. The soul is that power or principle, immaterial, immortal and finite, without which life could not exist and the body would fall a rapid prey to the actions of the commonest physical forces.

Now the soul is to the organic, what light, heat, electricity and magnetism are to the inorganic world. Each is shewn by its action on matter, and each alike is imponderable and otherwise incapable of proof.

The inorganic physical forces we may elicit, guide and control within certain limits; but the organic living force we cannot thus manipulate, whatever we might do to call forth or repress its latent energies in the individual being.

The living force or soul admits of many varieties which may be primarily distinguished into vegetable and animal, the former comprehending the entire vegetable, and the latter the entire animal creation. These again are separable into divisions, sub-divisions, classes, orders, genera, species, races, families and individuals, each a distinct entity following certain determinate laws as exemplified in its peculiar characteristics.

The aggregate of these individual units constitutes the *finite Spiritual world*; for the addition of units, however multiplied, can never lead to infinity, though the product of such addition may appear immeasurably vast to our limited understandings.

God alone is the *infinite Spirit*, that comprehendeth all things, is all-powerful and omniscient and the Supreme Ruler of the Universe.

The *finite Spirit*, as known to us in its highest earthly type in man, has a threefold function, comprising the vegetable and animal as well as that which is peculiarly human. For the strictly human part there are the faculties of Consciousness, Reason, Conscience, and Will.

Consciousness is that faculty of the Soul whereby it learns the past, the present, and the future, and the sphere of which is limited only by its actual amount of knowledge. Education extends that sphere, and hence an ignorant man has a smaller range of consciousness than one who is educated.

Reason enables us to judge of the fitness and unfitness of things, and of the relation between cause and effect. The power of reason also is expansible by education; for how can we judge of a thing if we are ignorant of its properties and relations?

Conscience is that faculty the special business of which it is to distinguish between right and wrong. It is conscience which informs us of our responsibility to a higher power, and it is to conscience that we owe the great principles of truth, justice,

charity, faith, mercy and morality. A main object of education is to bring out these principles and to exercise them constantly so as to strengthen the force of Conscience.

The Will is that power which gives us the command of all our thoughts, aspirations, words and actions. It requires to be educated to preserve that authority, for unless it be continually on its guard, it is liable to be misled by inferior motives of which conscience may not approve.

Consciousness, Reason, Conscience and Will, are, therefore, faculties which have no parallels among the instincts of animals, and which are altogether different from the vegetative functions of plants. For this reason it will be convenient to consider the soul of man separately under its three different aspects, namely, the vegetative or *vital*, the animal or *instinctive*, and the human or *rational*, to enable us to arrive at correct conclusions upon native education in a Psychological point of view.

I. Vital Province of the Soul.—The Vital Province of the Soul includes all those functions which form the legitimate subject of animal Physiology. Thus reproduction, development, growth, absorption, nutrition, circulation, respiration, digestion, secretion and excretion are the processes which belong to this department, the discussion of which would inevitably lead us into Physiology which, being foreign to our present purpose, it is my object to avoid. To the above list we might add tonicity, contractility, animal heat, reflex action, sensation and voluntary motion, which, though absent in plants, are nevertheless important *Vital Properties* of animals. Indeed they seem to form the connecting link between the strictly vegetative and the strictly instinctive functions, and might hence be regarded as an intermediate group.

II. Instinctive Province of the Soul.—To the instinctive province belong the instincts properly so called, *vis.*, the appetites and propensities, and the love of life.

Appetites.

To the appetites pertain hunger, thirst, fatigue and the sexual passion, the three first relating to the preservation of the individual, and the last to the continuance of the species. Each of them is confined in its action, and each readily satisfied. Thus hunger is appeased by food, thirst by drink, fatigue by sleep, and the sexual appetite by congress. An interval of repose must elapse before either of them can again come into play, when a repetition of the same indulgences leads to resatisfaction. This is what is called the gratification of sense, which has natural limits that cannot be passed without detriment to health. A moderate enjoyment of sense is not only compatible with health, but indispensable to life. But excessive, defective and vitiated enjoyments

produce alike disease and premature decay, the first by exhausting, the second by wasting, and the third by corrupting the powers of life. Thus excessive food and drink cause plethora and thereby imperfect assimilation and dyspepsia, excessive sleep weakens the bodily functions, and excessive sensual pleasure enfeebles the nervous system, all which lays the foundation for fever, inflammations and paralytic and other affections.

Defective food, drink and sleep produce emaciation and wasting, and these in their turn actual maladies.

Noxious food and drink poison the blood, irregular sleep disorders the general functions, and immoral intercourse leads to constitutional infection.

These are truths which cannot be too strongly impressed upon the minds of the young, and the education which neglects that duty is guilty of a most serious error.

Now as to the hearing of these remarks upon the subject of native education. A great reproach cast upon the people of this country is that they are given to excess in the pleasures of sense. It is also complained that their food is defective in nourishing quality and bulky in amount; that their drink is often of an injurious character; and that they have a vitiated taste for carnal enjoyment. This ought not to be the case under a proper system of education; for almost the first duty a child should learn to practise is that of controlling its appetites. This is best done by quietly pointing out to him the danger of defective, vitiated or over-indulgence in these respects—a lesson to be taught only at home, being generally neglected at schools. Morally the importance of such instruction is very great; because once a man abandons himself to the gratification of sense he is rendered permanently unfit for the higher intellectual pursuits, and his heart becomes dead to all correct moral feelings and principles. Sacrifices of sense, however irksome at first, are hardly felt after a time, while the benefit they confer is one the value of which cannot be lightly estimated.

Propensities.

To the second class of instincts belong the propensities to possess and hoard, to steal and hide, to injure and destroy, to guard and shelter, to gamble and squander, to quarrel and fight, and to fashion and construct.

It would be superfluous in a discourse like the present to quote separate instances of each of these propensities. For our immediate purpose it suffices to know that there is a natural proneness to acts of this description in every human being, since, apart from the savage state, we find examples of them in all nations and

countries. These propensities are inherited by man in common with the brute creation, but in him they are counterpoised by the intellectual and moral faculties, whereas in the lower animals there is no such balance.

Every form of society provides against the injuries which are liable to accrue from the abuse of the propensities, and so there are express laws to curb them in their exercise. But laws come into play merely when the offence has been committed, they cannot prevent the criminal tendency. To check that tendency two things are requisite—1. a habitual control of the propensities, 2. the development of the reasoning and moral faculties. The propensities must be brought under the dominion of the will, and the will must be strengthened by constant discipline and instruction. To be effectual that instruction must be exceedingly careful, and beginning with the earliest dawn of reason, continue through boyhood, adolescence, and manhood until the ripening of the understanding has taken place.

The animal propensities, equally with every other faculty, grow by use and decay by disuse. It should be an object, therefore, to prevent or retard their growth, for when they are entirely unwatched they have a natural disposition to grow, and, when once full grown, it becomes very difficult indeed to subject them again to any kind of moral government. But if they are watched from the first, and made on every occasion to submit to the will, their control becomes then a mere matter of habit, and gives no further trouble, unless the balance of the mind is completely overthrown by some sudden and unforeseen accident.

The Love of Life.

The love of life is so strongly developed in every species of animals that it frequently becomes the most powerful motive of action. From the smallest insect to the boldest beast of prey its sway is clearly seen. Even the most cruel tiger will run away from danger rather than court it. The same is the case with man except under certain conditions. As a rule no one will incur danger to life without some very strong motive, such as the sense of duty; and many will neglect duty and deliver up all their earthly possessions rather than lose their lives. So the love of life often can be made a potent engine for good or evil. For the prevention of crime nothing is so effective as the fear of death. And in the hands of a judicious physician it becomes a valuable agent for curative purposes. But in certain diseases the love of life is entirely at allegiance or momentarily overthrown by some irresistible impulse, as in delirium and suicidal mania. In such cases it requires to be resisted before any appeal to it can prove

of the smallest service. In certain persons the love of life degenerates into moral cowardice, which is very often the fault of association or defective education.

III. Rational Province of the Soul.

We are now prepared to enter into the rational province of the soul, which we shall divide into intellectual and moral, the former as belonging to the mind, and the latter as belonging to the heart in the sense in which that word is employed in Ethics, not in Anatomy.

Mind.

The mind, as a whole, has certain attributes which are commonly expressed by the terms soundness, genius, capacity, intelligence, ability, ingenuity, sagacity, firmness, skill, talents, energy, zeal, temper and activity. One of the great objects of education is to place these several qualities under a strict system of discipline, and to find them regular employment in order to invigorate the mind in relation to them, drawing out that which is good and putting down that which is bad.

The intellectual or mental powers are included under the phenomena of Consciousness and Reason, as already partly explained.

For further elucidation we shall distinguish them into the powers of external relation and those of internal action.

The senses of sight, hearing, smell, taste and touch, and voice constitute the powers of external relation, each and all of which are susceptible of very great improvement by education.

Thus the first impression of light upon the visual sense of the new-born babe is that of dazzling brightness. As the eyes grow accustomed to light they begin to perceive the presence of objects, and then their magnitude, shape, colour, number and relative distances.

The first impression of sound upon the sense of hearing is that of a confused noise. But as the ears become familiar with sound they begin to discern the expressions of endearment from those of admonition, and are gradually led to the meanings of words.

The first impression of external agencies upon the sense of touch is that of pain and uneasiness. But as the skin is habituated to their contact it begins to denote the degrees of heat, moisture, density, weight, resistance and mobility.

The voice in its first efforts utters mere inarticulate cries. But as the senses grow gradually matured, and the will commences to exercise its power, the tongue is made to modulate the voice so as to produce distinct intelligible words.

We might extend similar remarks to the senses of smell and taste, but the above instances are sufficient to illustrate our subject.

Now society, as it is at present constituted in this country, compels a certain development of these powers of external relation; but to methodize the process of that development and to extend its boundaries is an office which has not been hitherto attended to. Wherefore to effect that object the first employment of vision should be to observe carefully the external and naked-eye characters of bodies in varying attitudes and relations, and next to discover the internal and hidden through the medium of dissection and philosophical instruments, such as the telescope and microscope, just as in physics the first things to learn are the effects of the mechanical agencies, and then those of the chemical by experiments and analysis. The first employment of hearing should be to study the varieties of sound (in respect of the qualities of tone, fulness, intensity, duration, frequency and rhythm) as produced by surrounding objects, and then to dive into the intricate and secret, such as the complex sounds of music and the dynamic sounds of the human chest. To appreciate the beauty, time, cadence, harmony, melody and effect of musical compositions, and to distinguish between the tenor, bass, soprano, mezzo-soprano and contralto notes, require as much study as is requisite to master the details of the most difficult subject. And the immortal works of Beethoven, Mendelsohn, Handel, Gluck and Mozart are as great performances of genius and patient labour as the inimitable tragedies of Shakspeare. So also to understand rightly the indications of diseased conditions afforded by the complicated sounds of the chest it is necessary to attend as closely to the laws of acoustics and their relation to healthy structure and morbid changes discovered by inspection after death as we do to the meanings of words for the comprehension of elaborate discourses.

The first employment of the sense of smell should be to learn the simple odours of fruits and flowers, and then to ascertain the noisome and complicated smells of sewers, cesspools, slaughter-houses, graveyards, marshes, manufactories, farm-yards and hospitals, with reference to sanitation, and the qualities of artificial perfumes for scenting purposes.

The first employment of the sense of taste should be to know the flavours of the simple and familiar articles of consumption, and then to gelish rich and highly dressed viands and beverages to meet the unnatural cravings of the modern epicure.

The first employment of touch should be to learn the common properties of things in respect of moisture, temperature, resistance, density, weight and motion, and then to acquire dexterity in manual operations, such as writing, drawing, sculpture, painting, modelling, netting, knitting, embroidering, engraving, &c. The chisel of a Canova, and the pencil of a Raphael and a Murillo are exactly such as are being daily used by other men of inferior

note, but how wonderful and delicate must have been the hands of those masters in sculpture and painting to create works such as will transmit their names to the remotest posterity! Again, what tactile skill is evinced in playing on musical instruments and in performing surgical operations.

The first employment of the tongue should be to pronounce words with correctness, and then to attempt prolonged addresses requiring rhetorical effect.

We shall now proceed to the internal powers of the mind which we propose to consider in the following order, *viz.*—1, Curiosity; 2, Attention; 3, Memory; 4, Imagination; 5, Thought; 6, Judgment; 7, Conception; 8 Comprehension.

1. Curiosity.

Curiosity is that power of the mind which urges it to the acquisition of knowledge, and may be satisfied in seven different ways, namely, by instruction, imitation, observation, experiment, induction, abstraction and study.

Instruction is that mode of acquiring knowledge which implies the agency of another upon the mind of the recipient. It is that which is the earliest commenced and continued through life so long as the conviction lasts of the impossibility of any one individual being thoroughly and intimately acquainted with every thing. The necessity for instruction in all stages of life, once properly understood, prepares the mind for the reception of truth whatever be its source, for it is but reasonable to suppose that the man who has devoted his whole time to a particular subject should be a better master of it than one whose attention has been occupied by a totally different matter. It is one of the offices of education, therefore, not only to impart instruction, but also to impress strongly the necessity for it in every stage of life upon the minds of the young, so that when they shall have completed their scholastic curriculum they might not run away with the idea that they have learnt every thing and are fit for every business; instead of that they have merely entered the gate of knowledge opening the roads to that knowledge and leaving it to them to choose any of the lines they might prefer. Those lines are what we understand by the term *professions*. The importance of this matter cannot be too much insisted upon or over-estimated in reference to native education, blamed as the native youth are for intolerable presumption on leaving school—a blame doubtless incurred by ignorance and folly owing to defective instruments and methods of education.

Imitation is the mode of obtaining knowledge by copying. The power of imitation too is very early called into action, although it takes considerable time and study to bring it to maturity.

researches of chemistry. If it be a work of art then he should explain to his pupils all that he knows about its structure and origin, and indicate what he thinks to be its merits and what its faults.

In the school he should endeavour as far as possible to illustrate whatever he describes by tables, plates, figures and diagrams, as well as by actual inspection whenever he may be able to procure the objects of the lesson.

A few hours employed thus daily will lay the foundation of a career of observation, of which the result cannot fail to be highly advantageous in after-life, for a man will find it useful whatever be the path he may select, and whether he be in the whirligig of society or in the solitude of the wilderness. A Linneus, a Cuvier and a Humbolt, owed their greatness to habits of observation first formed in the earlier years, and subsequently applied to the more serious business of life. To a mind trained to careful observation there is nothing in nature beneath notice and nothing that has not some points of special interest.

Now, if the natives of India are wanting in any particular habit it is precisely the habit of observation. I do not mean to imply that they have any defect of perception; on the contrary they are very quick and clever in that respect. What I do mean is that they do not cultivate regular and watchful habits of observation—the observing faculty remaining in a state of nature without the strength and skill which education alone can give it. The consequence is that the sciences of observation have been with them, until recently, almost a sealed book, and whatever they have of them now are nearly all of a foreign origin. Thus Anatomy, Botany, Zoology, Geology and Geography were altogether unknown to them till very lately, the only department in which they possessed any knowledge being Astronomy.

To remedy so great a defect merits the constant and assiduous attention of every well-wisher of this country; but this will never be done unless the educated native gentlemen themselves take up the subject and insist upon their children seeing every thing with their own eyes and taking notes of whatever they do see. The habit must be formed early to gather strength in manhood, for when it is commenced late in life (as we may see among some of the students of the Medical College,) the result is neither very permanent nor very satisfactory.

Experiment is that mode of acquiring knowledge which consists in proving the truth of a fact by practical tests. All chemical facts are, *par excellence*, experimental facts. Thus by experiment we may prove that water consists of oxygen and hydrogen into which it may be resolved, and from which it may be re-produced. All medical facts connected with the actions of remedies on

diseases are likewise experimental facts, many of them being further entirely empirical, not admitting of any rational explanation. Thus it is an experimental fact that Quinine cures the intermittent fever, but we cannot give a rationale of its success. This fact, then, is not only experimental but also empirical inasmuch as we cannot properly explain it.

The experimental facts have grown so numerous that they have come to constitute entire sciences. Thus Chemistry and Medicine are both experimental sciences. Therefore, the education which neglects all instruction in the habit of experimenting is guilty of a great mistake, which, especially in reference to the natives of this country, is converted into a positive crime; for, after standing still for so many centuries, how can they be expected to make any effectual progress without repeated and varied experiments? Hence the practice of experiments should form an important branch of native education, because the necessity of it is self-evident, as without it they must be content to remain in a state of perpetual pupillage.

Induction is that mode of obtaining knowledge which consists in drawing inferences from a number of ascertained facts. It is founded upon the results of experiments and observation. Thus the circulation of the blood is an inductive fact which is established by observation of the mechanical arrangement of the heart and blood-vessels, and by the experiment of injecting fluids through them which pursue a determinate course guided by the physical peculiarities of structure. The law of gravity is also an inductive fact proved by falling bodies.

The power of induction is one of the highest gifts, and should, therefore, be most zealously cultivated. This is particularly required in a country like India the inhabitants of which have been so long dupes of their own fancy and credulity.

Abstraction is that mode of obtaining knowledge which consists in presenting to the mind words expressive of attributes without reference to any particular object. Thus the varieties of figure, number, color and quality, are all abstract truths—the two first giving rise to the *exact sciences* of Arithmetic and Mathematics, and the two last to Optics and Moral Philosophy.

This is the mode which is now most commonly employed in this country for the acquisition of knowledge, for it is the cleanest and easiest way, requiring no soiling of fingers nor fatigue. Along with the other modes this would doubtless be a most valuable one; without them it can give but the semblance of knowledge without the solid foundation upon which the facts of observation and experiments are laid. The exclusive teaching of the abstract sciences is consequently a clumsy and defective way of educating the mind, though its place is unquestionable side by side with the other methods of obtaining knowledge.

Study is the last and most general mode of acquiring knowledge. In its broadest sense it may be applied to all the different ways in which knowledge is derived, and then it means the mastering and digesting that knowledge. In the more restricted sense, however, it is limited to information obtained from books and records, and it is in that sense we wish it to be understood here. Most men of business have to get their information in this way; in fact all mercantile, legal and official transactions are carried on in writing, which has to be carefully studied and acted upon by those to whom letters and dispatches are addressed. Literary and scientific men and politicians, have also continually to refer to books and papers, for information and guidance; and the so-called reading public resort to them for amusement and instruction. Hence the habit of study is the one which is most cultivated among civilized nations as a means of information, entering as it does into the affairs of every-day life. Yet the taste for study is not the same in every case. And why? Because it supposes a good deal of preliminary education without which it cannot be prosecuted. The school-boy learns his lessons under the guidance of the tutor, the young man frequents the lecture room to help him in his studies; but the full-grown man of business must trust entirely to himself, for his success in life depends on the amount and kind of attention he is able to bestow on his affairs and now it is that he has most need of study and feels most acutely the effect of any previous neglect. Those who have idled away their time in childhood and youth, have never acquired a relish for any thing requiring study, and so in manhood they are utterly helpless except in work of the simplest kind. Those whose preliminary education has been defective, but not entirely wanting, are fit for business of a better description; but to make a thorough man of business in all relations of life, or a gentleman, it is necessary that the preliminary training should have been very good indeed, and perfect so far as it goes. To such a man study is of inestimable advantage and a great delight. Even to the imperfectly educated man it affords some pleasure, whereas to the ignorant man the very name of it is hateful. Therefore study, although the most important, is nevertheless an acquired mode of pursuing knowledge and only compatible with a certain degree of previous training. Hence we do not wonder that there are so few natives really fond of study; for in the absence of the more solid advantages of a developing education, they cannot be expected to relish books which they do not understand. Of all human habits that of study is the most difficult to form. As a discipline regular study is to the mind, what regular exercise is to the body. Exercise feeds and strengthens the physical powers, study feeds and strengthens the intellectual powers. Systematic exercise lends grace and precision

to the bodily movements, systematic study lends grace and precision to the efforts of the understanding. Study makes us acquainted with a vast mass of recorded facts, experiences and views, and saves us the trouble of acquiring them ourselves. Study leads us through paths trodden by others, and so secures us against the dangers and errors incident to new discoveries; and having thus shewn us all the beaten paths, prepares us to start after novelties from a more advanced point than was the case with our predecessors, and than would be the case with us if we were to remain in a state of ignorance and self-sufficiency. Study, therefore, is the crowning of the seven modes of acquiring knowledge, *viz.* instruction, imitation, observation, experiment, induction and abstraction; and, as such, is entitled to the greatest attention. In short, besides drawing out and disciplining the mental powers, one of the main objects of education is to cultivate and establish the habit of study, so that the individual, on leaving school, may be prepared to work on his own account and correct himself without the intervention of a third party. The presence of this habit is a sure sign of the sanity of the mind, and the absence of it, in an educated person, as strong an evidence in favour of insanity.

2. Attention.

Attention is that power of the mind which enables it to direct itself to the circumstances of one subject at a time. If uncultivated, various causes combine to distract the attention; whence, to prevent this, it is the aim of education to give it the quality of concentration. Attention then requires to be educated to attain to perfection quite as much as any of the other mental faculties.

It would be wrong to say that the people of this country are wanting in attention, however deficient they might be in perseverance or long continued application. But that is not the point, for attention by fits and starts may be very good while it lasts to be followed, however, by as good a lapse. Now the proper thing to do in the education of the native youth in reference to this matter is to prevent these fits and starts, and steady the attention upon any given subject, until it is thoroughly understood or finally disposed of. Therefore the cultivation of this power cannot be treated as beneath our notice without committing a very great error.

3. Memory.

If the mind required to be guided respecting attention, it requires this still more with regard to memory. Memory is that power by which any information communicated to the mind is permanently retained. Now, considering the vast mass of that information that must be required in the course of a whole life, it is impossible that the memory can ever be over-stocked. Carefully

watched and rightly understood, memory is most undoubtedly one of the noblest of human faculties, the exercise of which should be a blessing rather than a curse. What makes us conscious of our personal identity and moral responsibility but memory? It is absurd then to tell us that we are not to foster this faculty. Cramming is certainly improper, because it is the forcing of memory without the usual accompaniment of thought and judgment. But because cramming is improper it does not hence follow that the cultivation of memory is improper. On the contrary its cultivation requires some trouble and discrimination. In childhood the office of memory is comparatively easy, having to remember simple words and ideas; but as age advances the intricacies of knowledge also augment, so that the unaided memory finds itself at last unequal to the task of chronicling every separate event. Thus arises the necessity of providing aids to memory by *registration, classification and definition*, the result of this extended operation being henceforth known as experience. Therefore, besides the effort of committing to memory, the habits of registration, classification and definition ought to be formed in the school as a further development of this faculty, the use of which is sure to be invaluable in after life.

Now the effort of committing to memory or cramming is all that has been hitherto encouraged and cultivated in our schools, the habits of registration, classification and definition being generally neglected. This is a great misfortune, and so the attention of school-masters, as well as pupils, cannot be too often or too strongly directed to that defect and to the means of removing it.

4. *Imagination.*

Imagination is that power of the mind which enables it to conceive objects, qualities and scenes, of which it has no real knowledge, and which may or may not exist. Fiction and poetry are pre-eminently works of imagination. This is a power which is very readily and early excited; thus the stories of Jack the Giant-killer and the Dragon of Huntley have a greater charm for the child than the common details of a plain matter of fact.

Imagination has its uses as well as its abuses. Exercised upon legitimate affairs, it is a valuable associate to the other mental powers; diverted to sensual and unsubstantial objects, it leads to vice and corrupt habits of thinking.

Thus when we imagine the feelings of a man on the occurrence of any great catastrophe or success, it is a legitimate use of the imagination, for it promotes sympathy and mutual respect; but when we indulge in fancy on matters of love, that is an abuse of the imagination, because it leads to immorality and disputes.

To control and guide the imagination becomes hence an object of paramount necessity in the instruction of youth, and to this end must be cautiously directed the attention of parents and guardians in the exercise of the authority they possess over the young.

Now to sport in imagination has been heretofore a chief besetting sin of the Indian nations; for while they have their Ramayuna and Mahabharata there is not a Hindoo book on history of any particular merit, if we except the fragmentary accounts written by some Cashmerians. To curb this bad habit, and to confine the power of fancy within its proper limits of usefulness, is what is urgently required to destroy the unwholesome preponderance so long enjoyed by fiction over fact, and by romance over authentic history.

This, however, cannot be done without education and strict moral discipline; consequently here is another point to which the attention of every teacher of youth in this country should be specially called.

LECTURE VI.

NATIVE EDUCATION CONSIDERED IN A PSYCHOLOGICAL POINT OF VIEW—(Continued).

July 20th, 1861.

GENTLEMEN,

I HAVE now to direct your attention to Thought and the other faculties.

5. *Thought.*

Thought is that power of the mind which enables it to operate upon the treasures of memory or upon subjects presented to it through the external senses. There are two modes in which that operation is conducted, *viz.* *Reflection* and *Ratiocination*. *Reflection* is the doubling back of the mind upon itself and dwelling upon the general contents of the memory; *Ratiocination*, the application of the mind to determinate data, presented for its consideration, and then reasoning upon them to learn what they lead to.

Reflection is built upon the results of experience; *Ratiocination* on certain definite premises. *Reflection* spreads itself over the whole life of an individual; *Ratiocination* is confined to particular facts. *Reflection* is the act of the liberal philosopher; *Ratiocination* that of the professional lawyer or Mathematician. *Reflection* is influenced by collateral considerations; *Ratiocination* proceeds directly from premises to conclusions. *Reflection* is logic in a vague sense of the term; *Ratiocination*, in the more restricted sense of argumentation.

Reflection is based on a great multitude of facts; *Ratiocination* on a given number of facts. *Reflection* is an inexact process for the determination of truth, being founded on facts of varying degrees of certitude; *Ratiocination* is an exact process, being limited to facts of an equal degree of certitude. *Reflection* is used for drawing broad general principles; *Ratiocination* for particular inferences.

Reflection gives birth to theories and speculations; *Ratiocination*, to accurate and rigid deductions.

Reflection occupies itself with the past, the present and the future; *Ratiocination* limits itself only to the subject matter immediately before the mind.

Reflection takes cognizance of chances, possibilities and probabilities; *Ratiocination* of nothing but absolute certainties. *Reflection*

is an indefinite operation, being bounded by no rules; Ratiocination is a definite operation, bounded by positive rules.

Reflection is spontaneous and comparatively easy of accomplishment; Ratiocination has to be acquired, and demands much labour and expenditure of time for its prosecution. Reflection produces moral convictions; Ratiocination, logical convictions. But the results of Ratiocination are only so far true, as the premises are true; but if the premises are false, the inferences must be false likewise.

Reflection, therefore, is distinguished by the breadth of principle; Ratiocination by the rigour of conclusion. Hence reflection upon the results of Ratiocination constitutes what we would call profound philosophy, the soundness of which is an exact measure of the soundness of the individual acts of reasoning.

Scientific theories, political schemes, and commercial speculations are some of the useful products of reflection; experimental facts, logical deductions and mathematical solutions, those of Ratiocination.

Reflection and Ratiocination are then merely two processes of thought, the one dealing in generals, and the other in particulars; the one an indefinite and uncertain operation, and the other a definite and certain operation, for the determination of truth.

In each of these processes, but more especially in Ratiocination, are included the following acts, *viz.*, calculation, analysis, synthesis, comparison and deduction, without which no act of reasoning is complete, and the necessity for which should, therefore, be strongly impressed upon the mind of every student.

Now with respect to the Hindus, the want of reflectiveness is not one of their faults; on the contrary we have evidence of a high degree of reflection in their various philosophical dogmas, mystical though they be. It is Ratiocination which they most sadly want; and hence the practice of Ratiocination should form a fundamental part of their education. Along with this their reflective powers should be exercised upon science, history and commerce, a far more congenial and healthful occupation for the human mind than the entanglements of Brahminical subtleties and disquisitions.

6. Judgment.

Judgment is that power of the mind which enables it to trace the relation between cause and effect, and effect and cause. Judgment proceeds upon evidences of various kinds, *viz.*, intuitive and deductive, intrinsic and extrinsic, absolute and circumstantial, direct and indirect, demonstrative and exclusive, primary and secondary, positive and negative, and probable and presumptive.

Thus suppose A accuses B of having seen him cause the death

of C, by cutting him down with a sword, and B denies that C's wound is a sword-cut ; under these circumstances, the Judge requests the opinion of a competent surgeon to enable him to come to a correct decision. The surgeon finds the wound to be incised, i.e. such as would be produced by a sword or sharp instrument, but cannot be effected by a blunt or pointed weapon or a bullet, and he accordingly expresses his conviction that it was produced by a sharp-instrument such as a sword. Here then there are both positive and negative testimonies, 1st—that such a wound is and may be produced by a sword, 2ndly—that such a wound is not producible by any other weapon. And the Judge decides that B's assertion is untenable,—the effect shewing the nature of the cause—and the cause tallying with the effect produced. The positive testimony bears here directly upon the truth of the event, and the negative does the same indirectly by excluding the presence of all other causes.

In forming a right judgment, therefore, it is necessary that both the positive and negative testimonies should be allowed their due weight ; for an opinion founded upon the one class may not be borne out by the other ; but when both of them concur, no room is left for doubt, the judgment being in that case entirely complete.

The practice of scrutinizing carefully the negative as well as the positive grounds of an opinion before it is acted upon cannot be too highly estimated, and the formation of a habit of doing this constantly becomes hence an object of the greatest importance. The kind of education, which is at present the fashion in this country, includes the formation of no such habit, and we need hardly say that that defect is fraught with the most serious consequences. It leads to hasty generalizations and crude one-sided views—no firm conviction being wrought upon the mind of the absolute necessity of the social improvements which the natives of India are taught to regard as desirable for them.

The practice of teaching young men to form accurate judgments should, therefore, be an object of earnest solicitude, and no means should be left untried which may encourage such a habit. The study of natural history is a very appropriate means of accomplishing that object ; for, as it does not involve the passions, it is not likely to warp the judgment. But natural history will do this only when it is taught practically, and not merely from books ; but we doubt whether that is attempted in any of our colleges although it is one of the branches now said to be a part of their curricula.

7. Conception.

Conception is that power of the mind which enables it to realize an idea from a description of it, or from the tablet of memory,

or from the combined action of imagination and reflection. Thus the first idea of the Deity is conceived from description; the varieties of figure, colour, smell, taste and sound from impressions previously made upon the senses; and the restoration of extinct animals (such as that of the *Pakeotherium* of Cuvier) from reasoning upon the adaptation of external form to the solid internal skeleton. Again in mechanics, architecture and the fine arts, the design is obtained from an act of conception, except where it is a copy of something pre-existing. Conception, then, is the realization of ideas, and as the more frequently the mind is employed in realizing ideas, the greater is its power of conception.

It is not easy for the teacher to assist the conceiving power of his pupils. He has but one way of doing it, and that is by holding repeated examinations and compelling them to master whatever they have been taught. It will be seen from this that the value of their conceptions corresponds with the quality of his instruction, and if that instruction be defective so must the conceptions. We cannot, therefore, make the instruction too practical for the development of the power of conception, or exercise too great discrimination in selecting the teacher.

8. *Comprehension.*

Comprehension is that power of the mind which enables it to receive ideas. We shall consider it under the following points of view, viz. — 1st Sphere, 2nd Rapidity, 3rd Quality, and 4th Clearness.

1st. The sphere of comprehension is bounded by the extent of positive and relative knowledge. Positive knowledge is that which we absolutely know; and relative knowledge, that which resembles in some respects positive knowledge. Any thing beyond this is beyond comprehension, and the mind requires to be prepared by a slow process for its acquisition.

2nd. The rapidity of comprehension is confined to the perception of ideas within its legitimate sphere. Some minds are naturally quick in comprehension, others unusually slow, and others again excessively dull. This depends on the peculiarities of the mental temper.

3rd. The quality of comprehension varies with the kind of knowledge previously possessed. Thus a mind filled with superstitious ideas looks upon the phenomena of thunder as an indication of the wrath of God, whereas one possessed of the light of modern science regards them merely as the results of atmospheric electricity. A republican abhors a king as he would a tyrant, while a legitimist adores a king as having divine sanction for his authority.

4th. The clearness of comprehension depends first on the acuity of the mind, secondly upon the degree of application, and thirdly

upon idiosyncrasy. Some minds are always clear in comprehension ; others are always confused so that they cannot properly explain even what they know.

The sphere, rapidity, quality and clearness of comprehension are all improvable under education, properly conducted, to a certain extent, although differences in these respects will ever remain inasmuch as they are impressed upon the very constitution of the mind.

Heart.

This brings us to the moral powers of man. These are said to be seated in the Heart—the word heart in the second Book of Samuel, Chapter sixth, meaning the recesses of the mind. In the Book of Common Prayers of the Church of England in the Blessing by the Priest at the end of the communion, occur the following words ; “ keep your hearts and minds in the knowledge and love of God,” making thus a clear distinction between mind and heart—the former as the seat of knowledge, and the latter as the seat of love. So we shall accept this distinction and treat the heart as if it were a separate entity having powers and qualities of its own, the education of which, in a moral point of view, is even more important than that of the intellectual powers.

The Heart, as a whole, has certain attributes. Thus we speak of its calibre, firmness, softness, innocence, temper, fidelity, courage, patience, rectitude, candour and honesty. It is necessary that all these qualities should be kept in sight and scrupulously guarded in the moral management of children, for if any of them be neglected, a foundation is laid for imperfections of character which might embitter their whole subsequent career. And this is doubly required in a case like the present, for it has been said that these are precisely the points in which the Natives are deficient. In another place it has been shewn how unjust and foul that allegation is ; nevertheless it is incumbent on them, now more than ever, to watch most earnestly over the moral training of their children so as to disarm malice of every weapon of attack.

Conscience and Will are the two presiding faculties of the Heart as has been already explained.

The active powers of the Heart are known as Emotions, Feelings, Desires and Passions.

Emotions.

Hope, despair, joy, sorrow, mirth, regret, fear, wonder, surprise, fright, disappointment, alarm, indignation, scorn and remorse belong to the class of *emotions*, some of which are agreeable and others disagreeable. Of these, hope is the most important, for it may truly be said to be the anchor of the soul—the foundation of Religion and

human happiness. Therefore one of the great objects of moral training should be to excite hope—a duty most efficiently performed by the clergy of the Christian Church. With respect to the other emotions, it is often necessary to control them so as to preserve an appearance of self-possession. So they too are objects of discipline, for an untimely display of emotions is always counted as bad manners, and may sometimes be incompatible with expediency.

Feelings.

The feelings may be divided into two classes according as they produce agreeable or disagreeable sensations. To the first belong the feelings of love, pleasure, sympathy, benevolence, satisfaction, contentment, affection, kindness, regard, approbation, confidence, gratitude, humanity, respect, modesty, dignity, attachment, fellowship, agreement and consolation; to the second, those of aversion, displeasure, antipathy, malevolence, dissatisfaction, discontent, disaffection, unkindness, disregard, disapprobation, distrust, ingratitude, cruelty, disrespect, mortification, presumption, alienation, loneliness, disagreement and horror. The cultivation and exercise of the agreeable feelings give a healthy tone to the mind, and lead to personal, as well as public peace and happiness; whereas habitual indulgence in disagreeable feelings induces a morbid state of mind, occasioning frequent misunderstandings and interminable misery. Therefore an important object of education is to encourage the former and repress the latter—a duty seldom attended to in our schools. But although hitherto neglected that is no reason why it should be so any longer, especially when we know the harm we thus do to ourselves. The fulfilment of that duty must begin at home, with every teacher of youth, for unless his conduct agree with his precepts he cannot be expected to command the attention of his pupils or the approbation of Society. Let us then take care how we demean ourselves before children, lest by levity of speech or ebullition of temper we lose their confidence and esteem, thereby exciting feelings of a disagreeable nature. Love, sympathy and kindness are more effectual with them than harsh treatment, while, at the same time, they tend to generate other feelings of a kindred character; severity of punishment only hardens them in vice, and the abnormal state of habitual discontent destroys at length every trace of pleasurable affection.

Desires

The desire of power, of wealth, of distinction, of popularity, of notoriety, of peace, of society, of knowledge, of superiority, of fame, of health, of happiness, of esteem, of progeny, of comfort, of ease, of luxury, of splendour, of praise, of liberty, equality and fraternity, may be said to constitute the ordinary motives of action. All

these desires, to a greater or less degree, are possessed by every man in the state of health, and their gratification must take place in one shape or another. But the extent to which that gratification is to be permitted is a question of considerable moment. It cannot be good to indulge them, to excess, it cannot be good to suppress them entirely; a medium is what is wanted, and that medium cannot be struck except by a habitual mastery of the desires, so that they are to be gratified so far only as they may conduce to happiness, and no further. This is necessary for a variety of reasons; first because the desires of individuals may clash and produce unhappy disputes; secondly because their over-indulgence may lead to premature decay and moral depravity; and thirdly because their total abnegation cannot be brought about without taking away at the same time every stimulus to exertion. Accordingly the regulation of the desires is a point of no mean importance, for the whole conduct of a man hinges upon those desires. The cultivation of such as may be good or wanting, and the subjection of such as may be evil or preponderant, become hence an object of education, and it is but fair to indicate it to draw the attention of the friends of education to its great and vital necessity in reference to the natives of India, the more so as sensuality is justly said to be one of their besetting sins.

Passions.

The passions are usually understood to mean all morbidly excited emotions, feelings, desires, appetites and propensities. Thus pride, vanity, hatred, envy, jealousy, lust, avarice, malice, anger, revenge, ambition and fanaticism, are commonly denominated as passions or unamiable affections; their more or less violence generally depending upon the peculiarities of individual temperaments. From their very nature, the passions are of a turbulent character, calling loudly for present satisfaction. But that satisfaction may be imprudent in the highest degree, for it may inflict either a personal injury or a public wrong. Therefore it is not the gratification but the government of the passions which is the right thing to aim at, for that government is absolutely indispensable to social and domestic as well as public and private welfare. This object might be effected in two ways, i.e., by corporal punishment and moral persuasion. The government of the passions by corporal punishment is the government of fear, and the moment that fear is withdrawn, there is an end of that government. The government of the passions by moral persuasion is the government of reason, and when persuasion is no longer available, reason continues to exercise its function of restraining the passions. Therefore teaching a man how to restrain his passions, establishes a better government over them than forcing him into obedience whenever he may have given way.

to them. This consequently is as much an object of moral discipline as any of the preceding topics; and so it should be enforced with unwearied solicitude and anxious care in the management of children.

We shall now say a few words on the moral Principles and Sentiments, and on the fulfilment of duties, the paramount importance of which is felt in every scheme of education.

Moral Principles.

The principles of truth, justice, faith, charity, mercy and morality may be said to form the elements of conscience, or rather the tests by which it judges all human actions. It is impossible to exaggerate the value of any one of them. No character is perfect without those principles; indeed, they are among the highest attributes of God Himself. Whether we look at them in a spiritual or secular point of view they are alike inestimable. Where there are no truth, justice, faith, charity, mercy and morality, there is no Religion; so also in whatever community these attributes are wanting there is an absence of all social felicity. The presence or absence of any or all of these principles makes, in fact, the real distinction between virtue and vice. Therefore their importance practically cannot be too strongly insisted upon in any case, but more especially in the case of Asiatics reviled as they have been for a habitual disregard of every principle of conscience. In Christian countries the development of those principles is the great office of Religion, and thousands of pulpits ring incessantly with eloquent sermons upon their absolute necessity. In India there are no such advantages for the people in general, because their Religions do not inculcate the practice of hebdomadal or daily exhortations to virtue by the priesthood. Consequently in this respect the upper and lower classes are much on a par, and hence the apparent equality of moral imperfections throughout their whole social fabric. How could it be otherwise? But are we not bound, as the pioneers of Indian Civilization, to do away with that great anomaly? Must we submit for ever to a state of things so inimical to the spiritual welfare of the people of this country? Surely not. But how are we to remedy it? We must secure to them moral education of the most practical kind by placing them under pious tutors, and setting them good examples ourselves. Something of this sort is done in the Missionary Schools, and that is the reason why the boys brought up in them are said to have ethical knowledge of a higher order than those educated in the exclusive Government and private institutions, where the Word of God is never heard, and where the office of Religion is usurped by poetic effusions and tales of love. It is very well to create a taste for works of imagination and the drama as a gentlemanly accomplish-

ment, but when that alone is expected to supply the place of moral precepts it becomes a mockery and a sham without the excuse of substantial knowledge. Better it is to be without any education at all than to be without its real pearls, *viz*, the principles of truth, justice, faith, charity, mercy and morality.

Moral Sentiments.

Sentiments are ideas expressive of certain conventional notions of private and public morality. Thus friendship, honor, patriotism, piety, generosity, veneration, devotion, humility, constancy, admiration, ridicule, decency, liberty, gallantry, shame, esteem and loyalty are very properly classed under this head. Sentiments differ from principles in having a variable standard in different forms of society—while the principles are uniform and immutable in all forms of society. Sentiments, being conventional notions, vary also with the degrees of civilization. Thus an Englishman's ideas of honor and gallantry are widely different from those of the uncivilized Negro or of the effeminate Persian, while his piety and liberality are in as strong contrast to any similar sentiments to be found in a Hottentot or a native of the Andamans. Therefore when we speak of education with a view to the growth of sentiments we take as our standard the sentiments of the most highly polished nations of modern Europe. But then there are obstacles in this country to their growth of a very formidable character inasmuch as the majority of those sentiments are understood in an entirely different sense by the great bulk of the people, and any reform is not likely to meet with their immediate countenance. The very structure of native society, constituted as it is at present, is opposed to any such consummation; consequently it must be a work of time, although that work will never progress unless a beginning is made as early as possible and every effort used to urge it on.

Moral Duties.

The idea of duty involves by implication the idea of accountability. Thus we are accountable for our actions to God, to man, to Government, to our own conscience, to society and to our relations; and hence the various kinds of human duty may be generally divided into religious and temporal, public and private, and social and domestic. To the right understanding of each of these it is requisite that practice should be made to conform to theory, for without frequent and regular exercise no discipline is possible and no conviction can be wrought of the extreme value of punctuality in the discharge of obligations of any kind. But the teaching men their duties is commonly left to the ministers of religion, and hence it has not been contemplated in the present

nience. Without such power we are apt to become the mere plaything of our temper. Therefore in a sound education it is necessary not only to call forth the dispositions that are amiable and good, but also to take great pains to impart the power of self-control, reserve and tact. And as this has to be done in every civilized country it is hardly requisite to expatiate again upon its particular application to India.

Tastes.

The tastes might very aptly be defined to be acquired perceptions, or affections for objects which do not naturally produce uniform impressions upon all minds. The possession of taste is commonly called an accomplishment, and the number of such accomplishments varies with the objects of taste. Thus we speak of the taste for music, dancing, dramatic performances, poetry, literature, science, art, agriculture, horticulture, sports, gymnastics, dress, beauty, navigation, travel, &c. The cultivation of taste is reckoned as an important part of a gentleman's education, for without it society would lose much of its charm and the assemblage of the opposite sexes for any rational amusement would become almost hopeless. Now as the accomplishments strike agreeably the senses of those only who have taste it should be a primary object with all to cultivate taste not only for the personal gratification it might afford but also as a preliminary to the attainment and appreciation of female liberty, for the present degraded and ignorant condition of the women of India is a great blot upon the national character.

Habits.

The habits may be distinguished into good and bad. Among the former we may especially mention the habits of regularity, perseverance, industry, elasticity, charity, self-denial, humility, caution, veracity, simplicity, frugality, enterprise, economy, punctuality, abstinence, devotion, piety, self-examination. Among the latter, of irregularity, vice, inconstancy, idleness, uncharitableness, cruelty, selfishness, rashness, extravagance, obstinacy, negligence, debauchery, intemperance, self-sufficiency, inattention, luxury, hypocrisy, &c. Moreover in reference to their merit or demerit habits have been designated right and wrong, moral and immoral, wise and unwise, wholesome and unwholesome, proper and improper, pleasant and offensive, rational and irrational, salutary and mischievous, innocent and guilty, laudable and reprehensible, delicate and vulgar, virtuous and dissolute, truthful and fraudulent, honorable and dishonorable, creditable and discreditable, amusing and provoking, playful and dull, sensible and stupid, wonderful and ridiculous, noble and scandalous. The question of habits, by consequence,

is one of the highest gravity, for on the formation of good and manly habits depend the chances of worldly success and happiness, while bad and improper habits will as assuredly conduce to failure and misfortune. It is quite unsafe, therefore, to leave the formation of habits to the chapter of accidents, seeing that it behoves us to bestow so much care to secure a desirable result. Hence in the education of the young it becomes the duty of the guardian (or tutor) under whom they may be placed to watch and model their habits so that while they are still susceptible and under instruction they might acquire steady and commendable habits in every respect. We need hardly observe that this is as necessary here as in any other country.

Manners.

The manners, like the habits, may be classed into good and bad. Those belonging to the first class are known as respectful, amiable, polite, gentle, sociable, modest, unpretending, calm, mild, decent, guileless, attentive, high-minded, elegant, graceful, affectionate, kind, hospitable, delicate, serious, cheerful, cordial, gracious, humble, loving, &c. Those belonging to the second, as disrespectful, blunt, rude, rough, unsociable, arrogant, conceited, languid, indecent, wily, deceitful, inattentive, timid, mean, vulgar, awkward, graceless, unfeeling, unkind, inhospitable, cold, hasty, indelicate, cheerless, insincere, ungracious, impudent, proud, impertinent, &c.

The breeding of good manners is very properly considered an absolute requisite of gentility, for it not only enables us to avoid giving unnecessary offence in our intercourse with others but also to produce a favorable impression upon them respecting our wishes; whereas bad manners are the surest road to unpopularity, and often lead to difficulties and troubles in all social relations. Therefore pains should be taken in the formation of manners, and thus an effectual remedy applied to the ostreperousness and insolence in the alumni of our colleges and schools, of which Mr. Clint so justly complained.

B. Defects of Character.

Besides the defects of character due to imperfections of disposition, taste, habit and manner, there are others which arise from erroneous customs, prejudices and superstitions. The former we have already considered, the latter we shall now proceed to detail.

Customs.

Customs are usages which have the sanction of time or authority of some kind. When of a passing character, they are known as fashions. Customs, therefore, may be divided into long-established

lished and temporary. They are also recognized as national and private, religious and secular, and rational and arbitrary. With regard to their effect upon society or individuals, customs of all sorts are either beneficial or injurious, prudent or injudicious. And it is when they are injurious or injudicious that the act of submitting to them becomes a defect in character. Thus the Brahminical custom of daily ablution is not only a religious ceremony but also a very rational and prudent habit in a tropical country, while the practice of infant marriages is, not only irrational but also a very injudicious and injurious custom.

Prejudices.

Prejudices are opinions unsupported by facts. There are prejudices in respect of persons, things, places and ideas. They are either received by transmission, or engendered from the peculiar situation of the individual. Being destitute of a rational foundation and confining the view within narrow limits, they are often inimical to the healthy exercise of the intellectual and moral perceptions. Thus the prejudices of caste ignore the equality of men before God and prevent our perceiving the wrong inflicted on our fellow-creatures by thrusting them into inferior grades of society without any regard being had to their intellectual and moral conditions. The prejudice against female emancipation is another case in which the political rights enjoyed by men are denied to women without the slightest moral compunction, or justification.

Superstitions.

Superstitions are notions which are usually regarded as *quasi* religious, although they might be totally unconnected with religion. Superstitions generally owe their origin to fear and ignorance. Thus the Hindoos have a great dread of hobgoblins and sorcerers, and the Mahomedans of the swine. The Hindoos again believe in the power of omens, lucky days, charms and amulets. All these superstitions are therefore, so many weaknesses which would not exist with education properly conducted.

Having thus shewn that customs, prejudices and superstitions are so many signs of defects of character, it remains only to insist that the teacher of youth should understand that it is one of his duties to prevent their growth and to eradicate them when they already exist by repeated and careful explanations.

O. Attributes of character.

The attributes of character generally refer in a positive or negative sense to the mental and moral qualities already described. There are some, however, which belong to neither of these categories and may, therefore, be taken as *sui generis*. These are wis-

dom and folly, independence and servility, dignity and meanness, penetration and stupidity, refinement and coarseness, shrewdness and incapacity, and righteousness and corruption. Now education may do much to raise the attributes of character generally, but there are some which are ingrained in the very constitution of the mind, and which no education will ever mend. It is these latter which account for the differences between one man and another and between the different grades of merit.

II. *Lines of conduct.**

The lines of conduct may be considered in relation to God, in relation to our fellow creatures, in relation to Government and in relation to ourselves. Thus the line of conduct that should be commonly observed in relation to God is that of implicit faith and duty, in relation to our fellow creatures, that of justice, truth and honesty, in relation to the head of the State, that of absolute loyalty; and in relation to ourselves that of prudence, uprightness, and self-respect. There are many other lines of conduct subsidiary to one or other of those above alluded to; thus the line of conduct to be observed towards parents is that of respect, gratitude and affection, the line to be observed towards the spouse is that of love, confidence, devotion, and fidelity, the line to be observed in matters of business is that of integrity and good-faith, &c.

Consequently it is very desirable that the different lines of conduct to be observed in different cases and on different occasions should be pointed out in early youth, for without this it will take much experience of the world and trouble before a person can learn the exact line of conduct required to be pursued in each instance, and it may so happen that by the time he has done this he may have suffered irretrievably in the estimation of the world.

Conclusion.

In conclusion, we may observe that the body begins to decay even before the middle period of life. The vital processes and the appetites decay with the decay of the body. But the intellectual faculties come not into maturity till the body has been thoroughly developed, and continue in vigour for a considerable time long after the body has commenced to decay, while the moral faculties improve more and more with the advance of age until, at length, even before death, the soul realizes its freedom from the things of this world and prepares itself for its flight from its earthly home to the presence of its Heavenly Father. It is this progressive purification of the moral nature of man which is the divine earnest of the immortality of the Soul, and it is that purification which is interrupted when life is suddenly cut off in a career of sinfulness.

To prevent that catastrophe Religion steps in with timely admonitions and offers of pardon and mercy if we would but turn away from sin, and, therefore, to exclude the religious element from education is to exclude the very thing which alone can assure us of our spiritual safety in this world and in the world to come.

In the preceding account* we have endeavoured to speak of education merely in a Psychological point of view. It was not our intention to dwell upon the different branches of knowledge which should be taught. That is quite a separate question and could not be dealt with in the brief space of a sketch like the present. Our object rather was to point out the Psychological defects and deformities which required to be remedied and the means whereby that remedy could be most conveniently and speedily effected with the view of harmonizing the development of the various intellectual and moral faculties, and of obtaining the breeding of proper dispositions, tastes, habits and manners, for the purpose of securing respectability of character and rectitude of conduct. This should, in our humble opinion, be the first aim of all education. When that has been accomplished special instruction and independent pursuits would be subsequently followed with much greater advantage than when the preparatory education has been entirely neglected or slovenly hurried through. Now, as we have so often said in the course of these remarks, under the present system, the preparatory education of the youth of this country is highly unsatisfactory, from which it follows that their success in after life, whether in an intellectual or moral field, must be equally unsatisfactory. This is precisely the case owing (however not to any constitutional incapacity, but) to faulty methods of education which would force at once the boy to be the man ere he is fitted for that condition by careful preliminary training of his intellectual and moral powers in the earlier years of life.*

* Since the publication of the foregoing Lectures the improved University Courses of Instruction for the Entrance, First Arts, B. A. and M. A. Examinations have secured a certain uniformity in intellectual culture; but the absence of female education, home teaching, boarding schools, object lessons, Bible instruction, and physical training, still continue the great defects of native education.

LECTURE VII.

NECESSITY OF FORMING A MEDICAL ASSOCIATION IN BENGAL. MEDICAL FACULTY OF THE CALCUTTA UNIVERSITY.

May 27th, 1863.

GENTLEMEN,

THE object for which I have invited you to meet here to-day is the formation of a Medical Association in Calcutta to be called the Bengal Branch of the British Medical Association. The subscription by each member to the British Medical Association is a guinea a year, for which he is entitled to all its privileges as well as to the weekly journal of the association. You must all be familiar with the vast amount of good which the Medical Association in England has done and is still doing in producing a high professional tone and in advancing scientific knowledge. It is needless, therefore, to dwell at length on its advantages. They are patent to all who have taken the least trouble to peruse the Medical Periodicals of the day. The connection between that Association and ours will be one chiefly of an honorary character, for we shall not reject a member, if he conform to all the local rules, merely because he cannot afford also the additional guinea for the British Medical Association. In every large society there must be men whose means are small, and yet who may be useful members. This class of gentlemen will be welcome to our Association, and the only practical disadvantage in their case will be that they will not be entitled to the Journal of the Parent Association. Others, who are better off, will, of course, if they like, pay their additional guinea and so partake of the benefits of both the Associations. The extra payment, however, will not be compulsory in any case, and the chief advantage of this sort of connection will be the privilege of getting our transactions published in the British Medical Association Journal without any expense to ourselves. It would, no doubt, be preferable to have a Journal of our own, but I fear the time is not yet come to enable us to sustain such a publication. That will be the fruit of much previous toil and professional combination. In matters political, combination is strength; with us it means something more, it means progress. The Association of the members of a learned profession like ours for the purpose of mutual improvement and common protection against quackery and other evils can be

productive only of good. It is a sure sign that we are fully alive to the duties and responsibilities of our position, and that "sordid gain" is not the only thing which engrosses our thoughts. At the same time it would be prudish to deny that the mercantile part of the business forms a considerable item in our calculations; nay, that few in our profession can afford to be so altogether unselfish as to do without pecuniary considerations. The practice of medicine is our calling, our trade if you will have it so, by which we live. There are no two opinions about that. But then it is an intellectual calling—a calling which demands the active exercise of all our faculties, a calling which makes us minister to the relief of human suffering, and a calling which opens to us an unlimited field for the display of the finest feelings of our nature. The pursuit of this calling is attended with pleasure and pain, far different from what attend mere trading transactions. There are persons with whom the desire of gain is a ruling passion, and who rejoice or grieve as they are successful or disappointed in making money. With the Medical man it is quite otherwise. It is not the pecuniary speculation; it is the cure of his patient which is the grand object of his ambition. In this he often succeeds, often fails. His satisfaction when he succeeds is altogether unalloyed; his distress when he fails, though it may be owing to the incurable character of the disease, is sufficiently painful, but when that failure proceeds from his own ignorance he is conscious of a pang more acute than his probable worldly loss would alone account for. Thus, of all men, the Medical practitioner is daily put in mind of the gravity of his office, and that he must prepare himself with all diligence for the delicate duties he is called upon to discharge. I feel confident now that you will all agree with me in thinking that it is incumbent upon the members of our profession to avail themselves of every means in their power to acquire the fullest knowledge upon each subject, and, further, that, as the experiences of no two persons are exactly alike, the submission of individual results to the test of free and public discussion is the safest way of ensuring any material progress. The mutual interchange of ideas, the friendly comments, the discovery of errors, the addition of information from different quarters, the growth of a kindly interest in one another, and the maintenance of an *esprit de corps*, are only a few of the immediate advantages of association. The stimulus to scientific research, and the public respect and confidence which the earnest pursuit of truth will, at all times, inspire are other collateral benefits which follow and which operate so largely for the human good. To sustain the faltering, to encourage the timid, to guide the enthusiastic and to draw lessons from the learned are functions no less important in the diffusion of knowledge than the instruction of schools. The school days with all must come to an end; nor is it desirable that they

must feel too more or less. For we know very well that the field of observation in medicine is too large for any one individual to successfully occupy along the whole range of it. Some by choice, some by necessity, some by accident, devote themselves only to certain parts of it ; and it is fortunate that they do so ; for, without specialists, medicine could hardly have made the vast progress it has accomplished. Take, for instance, in civil practice, the obstetrician, the ophthalmologist, the dermatologist, the psychologist, the dentist, the aurist, the operative surgeon, the stethoscopist, each of these has paid particular attention to one branch of medical practice, and, hence, in that speciality he is tacitly admitted by all men to be an authority, being vastly superior to the mere general practitioner. Or take again in Military practice, the naval or army Surgeon ; the circumstances of his position during war compel him to adopt rules and measures totally different from those which hold good during peace or in common civil practice. He sees injuries of a particular class on a large scale under the most trying conditions ; and these conditions accordingly modify his rules of practice. On the subject of Military Surgery, therefore, he becomes a specialist by virtue of necessity, for he is obliged to master carefully and be guided by a class of circumstances which do not occur in civil practice. Thirdly, we may take a practitioner who has no special liking for any particular subject, nor is he obliged to devote himself to one from necessity ; and yet he may be so struck by a fortunate *run of cases* in his practice of a novel character that by sheer accident he knows more about them than any other mortal. He becomes thus a specialist almost against his will by mere chance or accident. All these different kinds of men may hence most advantageously become the instructors of each other, as well as of the great body of the profession who claim no special knowledge of any sort.

Thus much for the mere practical part of our vocation. There are however other kinds of knowledge upon which that practice is most wisely based, and an intimate acquaintance with which is, at least now-a-days, held indispensable to the scientific physician and surgeon. These are Anatomy, Physiology, Pathology, Chemistry, Materia Medica, all very extensive subjects in which numerous labourers are engaged all over the world to make fresh discoveries, to achieve new triumphs. I do not see why those of us who have the necessary strength and opportunity should not join these hands of pioneers of science and favour our Association with the results of their investigations. Lastly, there are a host of other subjects of professional importance, such as Natural History, Statistical Science, Medical topographies, Epidemiology, Sanitation, &c., which are here yet in their infancy, and the culture of which would be of the highest practical utility. Why should not

the Bengal Medical Association receive valuable contributions on all these matters ?

But, over and above all these things, what I wish most to see in this country is a high tone of *professional honor*. In the infancy of society, it is true, there are few occasions for the display of chivalrous sentiments. Then the struggle for existence supersedes every other consideration. The produce of the chase, the wild berries of the forest, and the fish cast on shore by accident, are the rude provisions upon which people in such communities have to subsist, and in proportion to the scantiness of the food is the acerbity of the struggle between individuals to obtain a morsel of it. In young colonies, too, as those of Victoria and California, and in a state of famine even in older countries, the sentiment of honor has to give way before the more imperious necessity of the moment. But in all well-regulated civilised societies the sense of honor is the vital spring of prosperity. Without good faith how could business of any kind be carried on at all ? Good faith merely, however, is not professional honor. That means more ; it means purity of principle and intention, and a desire to give every man his due. It is such a sense of honor which is the great charm of a good Physician. A Medical man who conducts himself honorably on all occasions and towards everybody, being upright in his personal behaviour, upright in all pecuniary relations, and upright in his bearing towards his brother practitioners, is the very *beau ideal* of our noble calling. Any one who can lay his hand on his heart and say that he has acquitted himself satisfactorily in all these respects, possesses in perfection the sense of professional honor. Such a man was the late Sir Benjamin Collins Brodie, and his great name hence became synonymous with all that was honorable and right-minded. To imitate him in this to the utmost of his ability ought to be then the highest ambition of every good man among us. But I am sorry to confess that the tone of professional feeling in this country is not yet in many cases of that high order. It is not at all unusual here to meet with breaches of etiquette. In my own experience I have noticed many instances of them. To speak ill of others seems to be the stock in trade with some persons, whereby they hope to serve their own selfish ends. This seems to be the case with certain ex-students of our Medical college ; nor is the evil unknown even among men of a higher grade who surely should know better. It will, therefore, be a most important duty of the Bengal Medical Association to help us in raising the tone of professional honor to the same noble platform that it occupies in European countries, and this we hope to do through the moral influence that it must necessarily exert.

I myself see no difficulty whatever in doing all this and more, if we are only true to ourselves and determined not to forsake our

post. I say, then, gentlemen, let us gird up our loins and resolutely push on. Let us redeem the honor of this country and add lustre to our names. Let us at once form a Medical Association and invite the co-operation of all legitimate practitioners in the good work we have proposed to ourselves. Let us urge on and God will help those who know how to help themselves.

The plan of operation I would propose is to have weekly or monthly meetings for the ordinary business of the society, and annual meetings for the purpose of receiving reports and addresses upon the different branches of knowledge in section one after another much in the same manner as in the British Medical Association. This would combine all the advantages of Medical Societies, with those of the more catholic Association. The ordinary meetings will be mostly attended by gentlemen living in and about Calcutta, and their business will consist in discussing all interesting cases of disease and pathological specimens occurring in hospital and private practice almost every day, and in receiving the results of experiments and individual observations. The annual meetings will be a sort of festive occasion once a year when the Mofussil as well as the town members will come together to hear the retiring President's address on the operations of the Association during the expiring year and also addresses from eminent members upon the progress of knowledge in the various sections, to receive reports and contributions which any gentlemen may choose to present on this special occasion, and to elect the office-bearers for the following year. The debates will be continued from day to day until the whole business is concluded, which, occupying only a limited number of days during a short time, will be a great convenience to members coming from a distance. It will give a pleasant holiday to all hard-worked practitioners who, by the increased facilities now offered by the lines of railway, will thereby have the opportunity of knowing more of each other than they could have done under the old rude ways of travelling. Then any town members and others, who might wish to be hospitable, might invite the Association to meet in their houses on given days, promoting by such friendly receptions the happiness and enjoyment of all. Indeed we may hereafter follow in this respect the practice of the British Medical Association and meet in different towns in different years. For that, however, the circumstances of this country are not yet ripe, nor will they be so till the railway system is more complete and the habits of the people are considerably changed. In the meantime, therefore, it will be sufficient for us to inaugurate the plan of ordinary and annual meetings, leaving all further improvement to the working of after years.

I do not wish it to be understood, however, that the Association I have proposed is to receive nothing but elaborate communications.

"That this meeting form itself into the *Bengal Medical Association* of which every qualified practitioner of Medicine is eligible to be a member."*

Pertinent to the above remarks and as relating also to the improvement of the Medical profession in Bengal, I do not hesitate to reproduce here the following letter I addressed to the Registrar of the Calcutta University as my first act immediately on my appointment as a member of its Senate :—

'To the Registrar of the Calcutta University.

SIR,—In connection with the Medical Faculty of the Calcutta University I beg to request you will be good enough to submit to the Syndicate for consideration certain points relating to the Degrees in Medicine which have particularly struck me in reading through the printed Minutes. Sincerely as I desire the welfare of our Graduates, I think it will lower the value of their Degrees in Medicine if we were to reduce the standard of qualifications required to obtain them. The Medical Faculty of the University of Calcutta, as compared with that of the London University, occupies a singular position. In London, besides the University, there are three other Corporate bodies, *viz.*, the Colleges of Surgeons and Physicians, and the Apothecaries' Company, which grant Diplomas to practice. Indeed until the passing of the recent Medical Act, none but those belonging to these bodies were competent to follow the profession of Medicine in London, so that those who wished to be *General Practitioners* had to go to the Apothecaries' Hall; those who wished to be Surgeons, to the College of Surgeons; and those who wished to be Physicians, to the College of Physicians. Within the last two years, however, in compliance with the wishes of the profession generally and by virtue of its ancient *Charter*, the College of Physicians has commenced to grant *Licences in Medicine and Surgery*, in order to dispense with the former separate examinations, and more especially to give a higher *status* to the great body of *General Practitioners*. The Graduates in Medicine of the London University too are now qualified to practice in London by simply registering their names in the Medical Register. But the London University, as originally founded, was very different from what it is now. It was then the Institution in Gower Street, established after the Model of the Edinburgh University, without, however, religious restrictions of any kind. That Institution subsequently received the name of

* This Association thus formed, still continues in existence, and has already done a great deal of good in promoting Scientific inquiry, and in enriching the Pathological Collection of the Calcutta Medical College. Its future is in the hands of the Medical Profession in India, both European and Native, who, I trust, will gather round it yet in strength and make it a still greater success. The proceedings of its last Annual Meeting were highly encouraging.

College, and why similar schools should not be attached to every civil Hospital throughout the country.* In England there is hardly a considerable Hospital which has not also a Medical school, but in this country we have hitherto been actually wasting our means in that respect.

A second and higher duty of the Calcutta University I conceive to be the encouragement of letters, and for this purpose alone should it confer the higher Degrees of Bachelor and Doctor of Medicine. I think, therefore, that there should be a great gulf between the Licentiates in Medicine on the one hand, and the Bachelors and Doctors on the other.

The present Entrance Examination may suffice as literary qualification for the Licentiates in Medicine, but for the higher Degrees there should be a *Special Matriculation* of a higher order, including a certain knowledge of Latin and Greek. I would not object even to the title of Licentiate being also extended to persons who study Medicine in the vernaculars, provided they received in every respect a similar practical education. As it is, the vernaculars enter into the already existing Entrance Examination, and there is no denying the fact that the poorer classes of the community can be practically benefited only through them, the class of Sub-assistant Surgeons being generally beyond their reach. I do not, however, contend that the education at present provided for the Native Doctor class would justify the conferring of such a title. On the contrary, I think, that would be highly improper. The class on whom this title should be conferred has yet to be created, and even when that happens, it would still be desirable to maintain a marked distinction between the Vernacular and the English Licentiates—the former being ranked as Second Class and the latter as First Class Licentiates, leaving the so-called *Native Doctors* as they are for employment under Government as now, if thought necessary.† But in my opinion neither the Second nor the First Class Licentiates should be admitted to the higher University Degrees, unless under exceptional circumstances. It is a bad plan to confer such

* Since the above was written the Sealdah Pauper Hospital has been established. This is a noble building, which could be made a great school for Vernacular Medical Education without much increase of cost to the State. The Justices would be glad to pay Rs. 30,000 a year for its maintenance if Government would take it over from them. The Medical College has become inconveniently small for its present number of students. It has only one theatre large enough to accommodate a class, and as every class is too large for any other theatre, the Professors and teachers are all forced to use it or not lecture at all. The result is that there is always a great scramble and much heart-burning as it is impossible to suit the hour to every one. All this could be avoided by establishing a separate Vernacular Medical School, where more justice could be done to the vernacular students as to Hospital teaching, &c., than now.

† The class here alluded to has now been in existence several years under the name of the "*Vernacular Licentiate class*." These students receive a higher education than the Native Doctor or Apothecary class, and, what is more, pay College fees. It is time now that the Bengali and Urdu classes should have separate teachers.

University College on the foundation of the present London University, embracing a wider field and confining its action to the function of examining and granting Degrees in the several Faculties. The Degrees in Medicine of the London University were, as already stated, pure Academic titles until the passing of the recent Medical Act, and even now, although their graduates are permitted to practice after Registration, they are regarded with great respect on account of the superior education necessary to qualify for their acquisition. There are, then, four licensing bodies in London, and if a young man be not willing to go through the severe and prolonged course of study required by the University, he can always resort to one of the other three.

Now in Calcutta the Medical College was the sole licensing body previous to the establishment of the Calcutta University. The Medical College still retains that power so far as the Hindustani and Bengali classes are concerned, to whom it continues to grant its Diplomas; but with regard to the Primary Class, the privilege has been transferred to the University. It is not to be contended that there is any analogy between the Medical College of Bengal, which is more especially an educational institution, and the Colleges of Surgeons and Physicians and the Apothecaries' Hall of London, which are purely licensing bodies, whatever lectureships they may have in connection with them. If there be any resemblance at all it is more to the Scotch Universities than to the London Corporations. And our Medical College has lost no more than *University College, London*, did by a similar transfer of its licensing power to the London University. So far it is all right. But the University of London does not profess to pass *General Practitioners* although it does not prohibit its graduates to practise as such if they like. The character of its regulations for the Degrees of Bachelor and Doctor of Medicine is a sufficient bar to the admission of the ordinary class of students, who are obliged to qualify for the profession elsewhere. In this respect the University of Calcutta is differently situated. It is the sole licensing body here in English, and hence it must pass *General Practitioners* in Medicine and Surgery, undertaking therein a function similar to that recently assumed by the London College of Physicians. This, no doubt, is its first duty, and it should be so not only regarding those who receive their Medical education in English, but also those others who may receive a similar education in the Vernaculars; for I think it very desirable that Vernacular Medical Schools should be encouraged. The Native Hospital seems to me to be peculiarly fitted for taking the lead in establishments of this kind. I do not see why a *Bengali Medical School* in connection with that Institution, if properly managed, should not be nearly as efficient as the Primary Class of the Medical

College, and why similar schools should not be attached to every civil Hospital throughout the country.* In England there is hardly a considerable Hospital which has not also a Medical school, but in this country we have hitherto been actually wasting our means in that respect.

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honorable distinctions upon *Licentiates* merely on passing some subsequent examinations in Arts. In the generality of cases, the Medical Graduate will have no time to go through the required course of study in an *affiliated Institution*. Considering the calls of duty and the necessities of his position, he could not do so without injury to his professional interests. To be successful in practice he must keep pace with the advance of knowledge and devote his whole time to the science and practice of Medicine. Any considerable diversion of his attention to pursuits which lie beyond his immediate sphere, will not increase his practical utility, nor will the public appreciate his services more highly in consideration of his after-achieved literary acquirements. It will be, then, only such men as do not find employment who will study for the higher Degrees at the sacrifice of their strictly Medical pursuits, and we shall have a class of Bachelors and Doctors who, by the time they obtain those honors, will have pretty nearly unlearned the business of their immediate calling. This, I must say, will be a great misfortune, and not at all in accordance with the wishes of the promoters of Medical education. In short, it will be as bad as putting the cart before the horse, while, at the same time, it will save no time to the aspirants for Medical honors. In my judgment, the better plan would be to hold the literary *before* the Medical examinations. Let a proper Matriculation test, including Latin and Greek, be fixed for the candidates who desire to try for the Degrees of Bachelor and Doctor of Medicine, and, after passing that test let them go through the usual course of Medical study side by side with the other students who are preparing for the *Licentiate*; for in both cases the strictly professional subjects must be precisely the same. Then, on passing the Medical Examinations, which again must be very much the same as now, the Entrance Class should be passed as *Licentiates*, and the *Spécial Matriculation Class* as Bachelors of Medicine, the Degree of Doctor being conferred after another examination, after, say, five years from the Bachelor's pass. Under exceptional circumstances when an Entrance student has displayed remarkable ability and managed, during the course of his Medical education, to master also the subjects of the *Spécial Matriculation*, on application to that effect, he might be allowed to go up to the Bachelor's Examination, provided he is prepared to answer *Matriculation*, along with *professional questions*. I believe such a scheme as this, if adopted, will prove highly beneficial; for, while elevating the social status of our Medical Graduates, it will avoid the effect of drawing them away to extra-professional pursuits after the passing of the professional examinations. It will also, I think, stimulate the higher grades to increased exertions afterwards, in order to maintain their superiority to the class of *Licentiates*, by engaging themselves in scientific investiga-

tions and otherwise, which cannot fail to be of immense advantage to the cause of human progress. I would therefore propose:—

‘1. That the candidates for the *Licentiate in Medicine*, after the Entrance, shall pass their Medical examinations as now in strictly professional subjects only, in English or in any of the vernacular languages in which they may have received their Medical education.

‘2. That those who pass the *Licentiate’s* examinations in English shall be styled the *First class Licentiates*, and those who pass the *Licentiate’s* examinations in any of the vernaculars shall be styled the *Second class Licentiates* in medicine.

‘3. That the candidates for the Degree of Bachelor of Medicine shall pass a *Special Matriculation Test*, similar to that for the First examination in Arts, but including a given amount of Latin and Greek—a knowledge of which is absolutely requisite for the comprehension of the most ordinary prescriptions and technical terms.

‘4. That after the *Special Matriculation*, the Medical examinations for the Bachelor shall be much the same as for the *Licentiate*.

‘5. That no candidate shall be allowed to go up to the examination for the Degree of Doctor of Medicine, unless he shall have obtained the Bachelor’s Degree five years previously and been engaged in the practice of his profession during that time.

‘6. That the test for the Degree of Doctor of Medicine shall comprise a critical examination in the following subjects:—

1. Histology.
2. Pathology.
3. Hygiene, civil and military.
4. The Statistical Science.
5. Epidemiology.
6. Psychology.
7. Moral and Mental Philosophy.
8. The Diagnostic Art.
9. Military Surgery.
10. Clinical Medicine and Surgery in all their branches.
11. Commentary upon one or more professional subjects with illustrations from the personal experience of the writer.
12. French, German or Italian.

‘In submitting these remarks I avoid referring to any invidious distinctions that may obtain between the Medical and the other Degrees. There is no question that the sciences which even a *Licentiate in Medicine* has to acquire demand more arduous labour and are, as means of education, more solid and developing than the course prescribed for the Bachelor of Arts. Nevertheless it

is not to be gainsaid that the majority of the class to which the Licentiates belong follow their vocation more as a trade than as a learned profession. And it is to raise them from that debased condition to an appreciation of literature and the arts that it is necessary to require of them extra-professional qualifications of a high order and such as a liberal education alone can ensure. It is thus only that they can be fit associates for the class of *gentlemen*, and thereby uphold the dignity of their particular calling.

'It is true it might be objected that some of the European Universities confer the Degree of Doctor of Medicine after a less severe test than that above recommended, and that by being so stringent, we might place our graduates under a great disadvantage inasmuch as students from this country might more easily and in a shorter time gain their end by a visit to Europe than if they remained here. And further, that a person taking his Diploma in Europe is put into a higher grade in the public service on his return to India than one taking the highest Degree obtainable in this country. In reply to the first of these objections, I need only urge the general contempt with which the *Degrees* granted by those lax Universities are treated by professional men; in regard of the third, I think, the Calcutta University should represent the evil to Government, so that the interests of our graduates may be duly protected; and as to the second, that too will cease of itself when no undue preference is shewn to individuals who, escaping from the more difficult ordeal in this country, fly to Europe for a cheap M.D.

'I have, &c.,

'S. G. CHUCKERBUTTY, M.D., *London*.

'*March 16th, 1863.*'

Since the above was written, the Regulations in the Medical Faculty have been altered and improved. The chief alterations are that "the candidate for the first M.B. Examination must produce a certificate of having passed the first Examination in Arts, *Latin having been one of the languages in which he was examined*; any Licentiate of three years' standing may be admitted to this Degree on paying a fee of fifty rupees and producing certificates of having passed the first Examination in Arts, *Latin having been one of the languages in which he was examined*; of having attended a course of 40 lectures on comparative Anatomy and Zoology, and of having passed an examination in the same: any candidate who is not a Bachelor of Medicine may be admitted to the examination for the Degree of Doctor in Medicine on producing certificates of having passed the Senior Diploma Examination of the Medical College or the Licentiate in Medicine and Surgery, of having practised the Medical profession with repute for five years, of being 35 years of age, of moral and social fitness, and of having passed the

B. A. Examination including *Latin*; any passed student of the vernacular classes if recommended by the Principal for distinguished merit may be admitted to the first Licentiate Examination on producing certificates of having passed the Entrance Examination, of having completed his 15th year, and of having been engaged 1 year in the study of Medicine and Surgery."

This is not enough. The time has come for a far greater change. The English Degrees and Licentiate in Medicine and Surgery should not be changed. But the Vernacular Licentiate is also now an accomplished fact, though granted only by the Medical College. It qualifies a person to practise the Medical profession, and so long as a man is a Licentiate, the public do not care to enquire whether he be Vernacular or English, or whether he got his certificate from the Medical College or the University. A licenco is a licenco whether signed by the Professors of the Medical College or the Registrar of the Calcutta University. At the same time the Calcutta University should recollect that as the promoter of National Education, it abdicates its highest function when it ignores everything vernacular. It would be wiser for it to accept the situation, and to institute a Vernacular Licentiate of its own, when it could make its own conditions to regulate Vernacular Education. To-day it may have only to deal with the Medical Faculty; but the day is not far off, if we may judge from the signs of the times, when it will have to decide also similar questions in the Engineering and Law Faculties; for there is no earthly reason why there should not be Vernacular Licentiates in Law and Engineering as well as in Medicine and Surgery. Surely a knowledge of English is not an indispensable condition to make a *gentleman*; nor should it be so to make a *Doctor, Lawyer, or Engineer*. At any rate let the people have their option, and if they prefer the English to the Vernacular Licence let them have it; but do not tell them they must have it or nothing.

The great fault of the Medical Faculty of the Calcutta University is that, with two exceptions, all its members are Europeans, with little knowledge of the vernaculars and of the opinions, feelings, wishes, habits and customs of the natives. The result is that practically it represents only European opinions and interests, and ignores the national element. Hence it is, it fails to secure confidence and popularity. Amongst other, this is one of the causes why its Degrees are so little esteemed. And so long as this state of things continues it will remain an exotic, instead of being naturalized and respected, among the people. It should not have one principle for the European, and another principle for the Native. It should not say to one man that it is good for the University to appoint him an examiner of the subject he may teach, and to another that it is not good for the University to appoint him an

examiner on the subject he teaches ; to one that it is good for the University to record any suggestion from him, and to another that it is not good for the University to record any suggestion from him ; to one that it is good for the University to make him a Fellow, though he be no M.D., and to another, that it is not good for the University to make him a Fellow because he is no M.D. It should be above cant and suspicion of partiality if it would command the willing respect, confidence, and affection, which its position demands. As a National University it should be perfectly fair to all classes of Her Majesty's subjects, and it should not seek to revive in India the worst vices of colonial mismanagement.

LECTURE VIII.

PRESENT STATE OF THE MEDICAL PROFESSION IN INDIA.

February 2nd, 1864.

Contents.

Division of the subject into three parts:—

1. *State of the profession 30 years ago:—Koberajes, Ticcadars, Barber-Surgeons, Midwives, Specialists, Superstitions, Hakeems, Jirrahs. Results of treatment. Attempts to introduce European medicine faulty (Native Doctors, Native Medical Institution, Vernacular Medical Classes), English Surgeons.*

2. *Actual State of the profession:—Calcutta Medical College, its English, Hindustani, and Bengali Classes; its means of instruction. Spread of Medical Education to Bombay, Madras, Hyderabad, Agra, and Lahore. Rapid progress and growth of the profession. Difficulties overcome. The present number of the new Medical men, their wealth and respectability: their services, their salaries, and appointments. Doboo Dwarkanath Goopio, type of the class; exceptions, and evils.*

3. *Measures of reform:—Bengal Branch of the British Medical Association; its objects, career, and consequences: its power for internal improvement. Quackery and its dangers, to be suppressed by extension of the English Medical Act to India or by a new Law. How to proceed. The Government Medical Service, its faults, the way to remedy them. Recapitulation and Conclusion.*

MR. PRESIDENT AND GENTLEMEN:—

I rise with a full conviction of my own inability to perform a task of vast magnitude. I feel that, in offering to address a body of gentlemen so highly educated as those before me, I have promised an undertaking far beyond my power, especially as the subject I have selected is the *Present State of the Medical Profession in Bengal*. I must, therefore, crave your indulgence while I speak, and beseech you to overlook my many deficiencies.

In considering the question before us I think it best to state at once that I shall, in the first instance, give a slight sketch of the condition of the profession prior to the foundation of the Calcutta Medical College; next, its actual state now; and lastly, the measures required for its improvement and reformation.

Those who remember the state of Medicine in Bengal some thirty years ago will easily recognize the great changes which have taken place since that epoch in the science and practice of physic.

The medical education of those days scarcely deserved that name ; as a general rule the profession being then still claimed as a birth-right by certain castes, who handed it down from father to son as a matter of inheritance. Every *Boydo* was a born *Koberaj*, who required only to feel the pulse and administer drugs to proclaim himself a physician without the ceremony of an examination. To be born in the caste was considered a Divine warrant that he needed no Diploma to establish his claim. Right or wrong, ignorant or learned, he was a *Koberaj*, because he pleased to be one. And who could dispute his title when the custom of ages had secured it to him ? To suppose that a *Boydo* could not be a physician unless he passed an examination, was to question the ruling of Menu, and the anger of God was sure to be aroused by such a gross act of impiety. The *Boydos*, however, were not the only people who practised medicine. A low caste of Brahmins (*Ganucks* or astrologers) also arrogated to itself the same right, and, besides, plied the art of *Ticcudars* (or inoculators), as the inoculation for the small-pox was attended with religious solemnity.

It was the commonest thing in the days I am speaking of to see these *Koberajes* going about the villages each with a brass case in his armpit, well furnished with reed phials filled with different kinds of drugs ; and, as they went from house to house, they dealt out these drugs to their patients, giving particular directions as to whether they were to be taken with the juice of the *Toolosi*-leaves, *Bael* leaves, rhizomes of grass or long-pepper. Drastics and tonics were the most in request ; next *Patchuns* (compound vegetable infusions) ; thirdly, powders, pills, and oils, some of which were the most expensive and difficult to prepare ; fourthly, quints, fums, fumigations, and cauteries ; fifthly, pastes and cataplasms ; and lastly, poisons in hopeless cases of all kinds, especially fevers with cerebral congestion. But the grand reliance of the *Koberaj* was placed in the regulation of the diet and clothing, and the entire prohibition of exercise, baths, and free air. Fasting, as a general rule, was rigidly enforced during the first days of all acute diseases ; nay, it was often prescribed even in the last stage of prostration and in chronic cases. The water was always ordered to be boiled before being drunk, except when it was employed as a diuretic or refrigerant in combination with sugar or milk. The chief food of the patient commonly consisted of *Batasha* (Arar puff) and water *Khos* (rice fried in the paddy), conjeer, *Qujro* mixed with the gravy of some vegetable or fish curry, and, lastly, rice and dahl. As to stimulating food or drink, nothing of the kind was allowed. Even milk was ordinarily excluded from the dietary of the sick, except after taking certain poisons. The person of the patient was to be

carefully clothed to prevent all contact with fresh air, but when there were heat and burning, it was to be stripped naked and strongly fanned. Change of scene and climate was seldom resorted to, and sea-voyages never.

But while the mass of the *Koberajes* were ignorant men and little respected, in fairness I am bound to confess that there were some among them well instructed in the *Shastras* and highly popular. Such names as Ramdullub Sein and Nillumber Sein were widely known, and they were reported to have effected extraordinary cures. The latter of these gentlemen attended a patient under my own observation now more than thirty years ago, and it was curious to see how the villagers flocked around to have a sight of him all along the road. The case was then in the last stage of dysentery, and so, finding that he could do nothing in the way of cure, he boldly foretold the day and hour of death, which proved to be correct.

But, though the *Koberajes* were mostly *Boydos* or low-caste Brahmins, the surgeons were nearly all barbers (*Napils* or *Hajams*). The *Koberajes* were ready enough with their nostrums whenever these were required, but with the lancet they durst not trust themselves. On the contrary the barbers were in the constant habit of handling sharp instruments, and so thought no more of cutting a boil than shaving the head. Of human anatomy they were utterly ignorant; consequently, their surgery was of the rudest kind, and went no further than the treatment of boils, wounds, bruises, and ulcers. Fractures and dislocations were left to the tender mercies of old women, who tried to reduce them by dint of persevering friction of the parts. In midwifery, again, it was the women of the lowest grade who were called upon to help, for the business was looked upon as *naft* and degrading for men. The knowledge of these *crones* was on a par with their social rank, for, beyond tying the navel-string and carrying off the soiled linen, their practice generally did more harm than good.

The Barber-Surgeons, however, knew the use of some ointments, and firmly impressed on their patients the necessity of thorough and frequent ablution. Although most of them confined themselves to surgery, some few did at the same time prescribe physic, to the no small annoyance of the orthodox *Koberajes*. Hence, though the brass case in the armpit was the sign of a *Koberaj*, it by no means always followed that the bearer of it was a *Boydo* or a Brahmin. Indeed, practically in most cases, there was no perfect line of demarcation between surgeons and physicians; the fact being that each man professed according to his taste or convenience what we would now call a medical or a surgical branch, or one or more portions of each. Thus, besides the *Koberajes*, Barber-Surgeons, *Ticcadars*, and midwives, there were a host of

specialists. There were itinerant eye-doctors, who went about to perform the operation of extraction for the cataract; itinerant phlebotomists, who bled for all sorts of pains and aches; itinerant lithotomists, who cut for stone in the bladder; itinerant cuppers; itinerant leech-men; itinerant devotees, who sold all manner of charms and amulets for the prevention and cure of diseases; itinerant exorcisers, who pretended to cure hysteria, mania, and epilepsy by expelling evil-spirits; Ojhas, who professed to extract the venom from poisoned wounds by charms, incantations, and religious mummeries; priests of Hindoo temples, who advised penance and money-gifts to particular idols, who, they said, had the power of effecting miraculous cures; cauterisers, who used the *gool* (or burning coal) and red-hot iron for chronic disorders; acupuncture-men, who would puncture the enlarged spleen and liver; issue-men, who would make large issues on the legs and arms for all diseases of plethora; women-doctors for complaints connected with the generative functions; travelling nurists; tooth-extractors; and so on. All these men, ignorant and narrow-minded as they were, had a certain amount of dexterity in their different callings, which, no doubt, was the result of repeated practice. It does not appear that they ever attempted to tie a bleeding vessel or to use internal injections, though, in cases of obstinate constipation, they often introduced into the lower bowel a *Pawn-stalk* or oiled *brinjul* to procure alvine evacuations. Cholera, small-pox, and other diseases of the Epidemic class, which they could not manage, they ascribed to the anger of some god, whom they tried to propitiate by vowing sacrifices, by presents and money-gifts to the Brahmins, by growing the hair and finger-nails, and by *Poojahs* celebrated with feasts and *Kobees* (or singing matches) and the noisy music of gongs, cymbals, shell-trumpets, and tom-toms. Infants afflicted with convulsions they exposed in wicker baskets suspended from some lofty tree, and there left to perish of hunger and cold, under the mistaken idea that they were possessed, and it was unsafe for the household to keep them any longer. It was a most revolting spectacle to witness these poor things screaming and writhing from want of food, and grown-up men and women coldly looking on without daring to approach them.

* This was the case with the Hindoos, but the Mahomedans had their *Hakeems*, who bled and administered physic, and *Jurrahs* who exercised the practice of surgery. Unlike the Hindoos, the great *forte* of these men was to *feel the patient well and to practice frequent depletions*, with the view of renovating the blood and purifying it at the same time from all kinds of corruptions. With them periodical bleeding was the order of the day, and no sooner a man complained of a little back-ache, heaviness of the head, or

inclination to itch, it was thought high time to resort to the operation at once. These men, too, were sometimes good oculists, although their instruments were of the rudest manufacture.

As was to be expected from the great mass of ignorance and error which pervaded the ranks of the profession, the results of treatment under these circumstances were the most unequal and unsatisfactory. Where one man was cured by the remedies employed, hundreds were hurried to the grave by utter inanition, by the exhibition of violent poisons, or by sheer ignorance, or crippled for life by excessive salivation or the loss of some vital organ.

To use the words of Dr. H. H. Goodeve in his introductory lecture to the students of the Calcutta Medical College in the year 1848,—“Whatever may have been the degree of success with which the study of medicine was pursued in this country in the days of its ancient magnificence—and we have reason to believe that our art had then attained to very great eminence among the Hindoos—nearly all traces of this learning have long passed away. A very few years since the Native practitioners of medicine knew little more of the science they professed than a routine acquaintance with the properties of certain drugs, which they used empirically; or, if they pretended to give any account of their treatment and assigned reasons for the exhibition of their nostrums, their pathology and therapeutics alike were a farrago of unintelligible nonsense, compounded of ignorance and pedantry. Fortunate, indeed, was the patient whom they contented themselves with treating by simple and harmless medicines, commingled though these often were of 50 or even 100 ingredients. They possessed, and very frequently employed at haphazard, most potent and deadly drugs, the baleful effects of which too often proclaimed their poisonous character and the culpable ignorance which had dictated their administration.

“Of surgery they were confessedly and most lamentably ignorant. The simplest wound, the most trifling accident which the commonest knowledge of anatomy and the most ordinary principles of treatment would have sufficed to relieve in a few minutes, in their hands often became fatal to the sufferer, or terminated in a permanent and distressing deformity; whilst the diseased structures now so rapidly removed by the skilful management of the educated Surgeon were to them hopeless maladies which they dared not handle, or which became infinitely aggravated by their mischievous interference.

“Of the *obstetric* branch of the profession they were, if possible, still more fearfully uninformed. It is impossible to conceive anything more dangerous or ill-adapted than their regulations of the lying-in room. When the labor was most natural, their interference was beyond anything injurious and inhuman—aggra-

vating the sufferings of the woman ten-fold by their absurd and cruel direction, and often sacrificing the lives of the mother and her infant, where nothing was needed than permission for nature to work out her own arrangements without interruption from art. On the other hand, in cases where human aid properly directed would be invaluable, they were paralysed and incapable of affording the least assistance. Prayers and charms were their only resource and the woman died undelivered; or, if the child, alive or dead, were expelled, the mother was permitted to expire without an effort being made to save her under the influence of some of those fearful accidents which not unfrequently attend upon parturition in all countries."

In such a state of things was it to be wondered at that the practitioners of our art, as a class, commanded no respect and but little confidence? Even the highest of them were treated with so much social contempt that no orthodox Brahmin would eat or drink any article of food polluted by their touch. In favor of drugs alone a dispensation was allowed by universal and time-honored custom, for it was said these could never be so corrupted, nor did it matter if they consisted of substances of an usually forbidden nature.

European practice was then as yet but little known in the country. The Government, however, had not been altogether idle to improve matters in this respect, as will appear from the following extracts from Dr. W. C. B. Eastwell's introductory lecture for 1860:—"It was not until the year 1822 that the English Government made any systematic attempt to impart medical instruction to the Natives of this country, and it was then only to those who were destined for employment in subordinate positions in its service. Previous to that time natives of the country had been trained in the different Hospitals under European superintendence as Native Doctors (as they were termed), and in this manner had become acquainted with the general aspect of disease and with the European modes of treatment, but they obtained no systematic education, and could not be regarded in any other light than as trained Hospital Assistants. In 1822 the Government established a Medical School, named the Native Medical Institution, for training Native Doctors. The school was placed under the control of an European Medical Officer, who was aided by Native Assistants. Information was communicated through the medium of the Oorloo language. * * * Dissection of the human body was not, however, attempted, and the only practical information on this subject was obtained from the dissection of the lower animals and from post mortem examinations of persons dying in the General Hospital in Calcutta which the students of the Native Medical Institution were permitted to witness. In the year 1826 a further effort was made by Government to extend

Medical education by the institution of a Medical Class at the Calcutta Sanscrit College, and by a similar Class at the Calcutta Madrasah."

In these latter Institutions, however, the ancient Hindoo and Mahomedan Medical works were taught at the same time with certain elementary treatises on Anatomy, Surgery, and Medicine, translated from the English language or composed for the purpose in the vernaculars.

All these efforts were but of little avail, and the result obtained was far from satisfactory. Nor did the influence of the English Doctors in those days count for much. It was only in the Presidency and the larger towns that they were to be found. Those were the days of free depletions, violent purgatives, and exhausting salivations, the dread of which, along with the absence of an appreciative Native public, tended to circumscribe materially the benefits of European modes of treatment. But, granting all the praise and honor due to our hard-working and intelligent predecessors, the European Medical Officers were at best only birds of passage, and could not, therefore, permanently improve the position and prospects of the profession out of the Service. Independent European Medical settlers there were none, nor did there exist then in the country any proper means of instruction for the East Indian youth on the European model.

Such was the state of the Medical profession immediately prior to the foundation of the Calcutta Medical College. The Native members of it were all unqualified men, totally ignorant of the modern sciences, and, if learned at all, it was merely in the ancient lore of the Hindu and Mahomedan schools, which taught no human anatomy, physiology, or chemistry, and were replete with errors and fanciful views of all kinds in their pathology and therapeutics. The European members of it almost all belonged to the Government service, and wrote and spoke in a foreign tongue, which, from the number of technical terms they made use of, presented formidable difficulties to all uninstructed persons. The opening of the Classes of the Calcutta Medical College in February 1835, set on foot, however, a mighty revolution, the fruits of which have been ever since benefiting the land by making every year scientific Medical aid more and more accessible to all classes of the population. At first education was conveyed entirely in English, which, in a very short time, succeeded in breaking down the antiquated prejudices against human dissection and practical midwifery, and preparing a class of Native Medical men well grounded in the study of rational medicine. In 1838 an additional Class was formed in Oordoo for the instruction of Native Doctors, and in 1852 a further addition was effected by opening a third Class to be taught in the Bengali language.

rational medicine.* It would be hard to tell the exact number of the new Medical men engaged in practice all over the country, but, if we may venture to guess, we may say they may be counted by thousands. Of the students of our own Medical College alone there were in 1860 in the service of Government, according to Dr. W. C. B. Eatwell, 85 Sub-Assistant Surgeons, 62 Bengali Class Native Doctors, and 330 Hindustani Class Native Doctors, giving a grand total of 477 Officers. These numbers have greatly increased during the past three years, and when we take into calculation the number employed by the Railway Companies, Tea Companies, Passenger Vessels, Planters and Zemindars, and as private practitioners, and the numbers which have issued forth from the other Medical Schools, it will not be surprising if we said that there are now in India thousands of reliable Native Surgeons and Physicians, whereas none of this class were to be found any where only thirty years ago. All of these practitioners are well to do in the world, and many of them have grown opulent and respectable members of society. The aggregate amount of wealth represented by them is considerable for this country when we come to think of the recency of their existence and the terrible obstacles they have had to surmount. Of the benefits they confer on the public no tongue can speak nor pen describe; they are engraved in the hearts of the suffering multitude, and their extent and value can only be judged of by the great demand which has sprung up within so short a period for scientific Medical aid among all classes of the community.

This, we will say, is the bright side of the picture, but, like all pictures, it has a reverse side as well, which we shall now proceed to contemplate. The phenomenon we have seen has been so amazingly rapid in its growth that it has almost taken the breath out of its immediate beholders. The spectacle was too dazzling to admit of an early scrutiny. People at first were too much rejoiced at the suddenness and mightiness of the apparition to look beyond the surface. We shall shew that, that was precisely wherein the danger lay. It was a danger that was lurking within and without the pale of the profession. The first years of this wonderful regeneration of medicine under the skilful management of Mr. M. E. Bramely and Dr. H. H. Goodeve, to the latter alone being due the credit of introducing for the first time into this country human dissection and the study of practical midwifery, were years full of confidence and hope. The pride of knowledge was the all-absorbing passion depicted on the faces of the youths who crowded the lecture-rooms of their infant Institution. The progress and enterprize of the Native Medical Students were the great topic of the day. All true friends of

* There were only 35 of those in Calcutta according to the last published Annual Report of the Justices.

India were glad of their success. Lord William Bentinck, Lord Macaulay, Sir Charles E. Trevelyan, Sir Edward Ryan, Dr. John Grant, Mr. David Hare, Baboo Dwarkanath Tagore, were the great men who did every thing, in their power to foster and encourage them. The chemical experiments of Dr. W. B. O'Shaughnessy attracted admiring crowds of spectators to the College, who, as well as the regular pupils, might have been seen fascinated to the benches on which they sat by the new truths that were every moment bursting to their observation. Truly, they might have exclaimed, all this must make us wiser and better than our forefathers, and yield great pecuniary advantages! Buoyed up with hope, petted by the great, and intoxicated with knowledge, the first band of students labored with a zeal and determination which astonished even the Orientalists. A series of triumphs greeted them as the result of their first examination. A batch of Diploma men received their Honors amid the admiration of a crowded assembly, and Dr. John Grant delivered a telling oration to signalize the event. Now came to be tested the money value of those Diplomas, and the Government of the day was prevailed upon to offer to the successful candidates a salary of Rs. 100 each per mensem in the public service. The young men, it was said, felt deeply mortified at this scale of remuneration; nevertheless, as they had then no experience of the prospects of private practice, most of them accepted service on the terms proposed. The Government, with its usual liberality, at once proceeded to open Dispensaries for the poor in the principal Civil Stations, and, by the recommendation of the Committee of Examiners, appointed to their charge the newly passed young men as Sub-Assistant Surgeons under the superintendence of the Civil Surgeons. Baboos Nobin Chunder Mitter, Uma Churn Sett, and Rajkisto Dey were the first to be so employed, and then promoted to higher pay as their merits became duly appreciated. Some of those gentlemen here named now number among the dead.

One of the most illustrious of that batch, Baboo Dwarkanath Goopto, an honored member of our Branch, was, however, immediately taken by the hand by the late Baboo Dwarkanath Tagore, whose unstinted liberality and public magnificence were felt in so many directions. Baboo Dwarkanath Goopto at once became the Family Medical Adviser of that noble-bearded patriot, and was by him introduced to a circle of rich friends, who, by their united allowances, secured for him an early independence. Baboo Dwarkanath Goopto lives now to favor our Meetings by his presence, and it would do good to our Branch if all the younger members of the profession were to imitate his example. In him meet the events of nearly thirty years, and the early promise of his career is well sustained by the wisdom and activity of his

maturer age, affording thus a literal fulfilment of the good advice of Dr. John Grant when delivering his Diploma some twenty-five years ago. His success is an earnest of what all can do by adhering simply to private practice. But, while admitting his case as a type of many others I could name, there is no denying the fact that several have sunk under the evils which lay below the surface. Some, puffed up by vanity, have shrouded themselves in self-conceit, and will, on no account, believe in improvements which they regard as mere idle novelties : some, spoilt by unforeseen prosperity, have abandoned themselves to lethargy and vice ; some, contending fiercely with the ignorant *Koberajes* and *Hakeems*, have insensibly descended to the low level of these, and adopted habits and practices disgraceful for the members of a learned profession like ours ; some, not satisfied with legitimate gains, have imbibed a sordid mercantile spirit and become dead to all refinement of sentiments ; some, wanting in good feeling and candor, have betaken themselves to evil speaking, so that they might raise themselves by running down their neighbours ; some, tired of industry and study, have gone astray into the easier paths of Homœopathy, Hydropathy, Morrisonianism, and Cholera-curers ; and lastly some, who have both talents and energy, have conceived too great an opinion of themselves and learnt to despise their brother practitioners, with whom they think it mean to hold any intercourse even for their common good.

All this is a matter of profound regret, for the conduct of the few has brought unmerited ridicule and discredit upon the whole body of members of a noble and honourable calling. What can be a surer proof of this than the facility with which all sorts of charlatanism meet with a ready public to welcome their professors ? What else will explain the pliancy with which a noted Homœopathic practitioner has been recently installed as the Health Officer of Calcutta ? The Medical profession is sick within and assailed by enemies from without. There is a canker in it which is eating into its very vitals, a sore spot, a slough, which must be promptly amputated if it is to re-assert its dignity in Bengal. To perform that operation and to unite the integral members by a common bond is what is wanted ; and that is precisely what the formation of the Bengal Branch of the British Medical Association contemplates. Our desire is to hold up to contempt all that is contemptible, and to commend for imitation all that is good and commendable. Thus shall we separate ourselves most completely from all disreputable and irregular practices, and win back to our ranks those who have been led into temporary error. Our periodical Meetings for the discussion of all Medical questions is a most useful tribunal, the verdicts of which will go far to secure the advancement of the profession. More than this

they supply a much needed stimulus to exertion, and afford a congenial field for the employment of ardent and unoccupied minds. Of this there can be now no manner of doubt. The experience of the last six months is a sufficient guarantee of what can be done, and it gives me real pleasure to congratulate the members of our Association upon this auspicious commencement of a new and bright era, the mark of which will be certainly left on the pages of Indian History. During the short time that has elapsed since the foundation of this Association, it has already received valuable contributions from a variety of gentlemen, among whom I may particularly notice the names of Dr. Chevers, our learned President, and of Drs. Fayrer, Browne, Beatson, Juggobundo Bose and Mohindro Lall Sircar, and of Baboos Unnoda Churn Kastogry, Nilmadhub Halidar, and Cella Chund Halidar. Services such as theirs should be gratefully recorded, setting us as they do bright examples of public spirit, and adding very materially to our stock of information. But, while expressing our thankfulness to Providence for the glorious career which our Branch has already achieved, we have to deplore in the untimely death of Dr. John Brown, the loss of an earnest and inestimable member. May it be long ere we meet with another such calamity! We are as yet but a scanty band, for the roll of our members scarcely counts more than seventy. Nevertheless, I feel confident that a great future is now open before us, in which our profession will rise up before the world in nobleness of strength and well-earned glory. I am convinced that we are in the right path at last, and that every day henceforth will find us more and more united and ready to defend our common interests.

Yet I must confess we are far from accomplishing our mission quite so easily. There yet remain many obstacles to be overcome, many enemies to subjugate, and many errors to dispel. Even the Metropolis of India is infested by a host of impudent harpies who prey upon the credulity of the unsuspecting. Every druggist and chemist, every apothecary and quack, every sluggard, fool, and rogue, enjoys as yet full liberty to style himself a Doctor and prescribe for the sick. Can this be allowed to continue without detriment to the public interests? Most assuredly it cannot. This confusion of the educated and the uneducated, the ignorant and the learned, the legitimate and the illegitimate, and the honest and the dishonest, is a heavy misfortune under which the profession will continue to groan as long as legislative interference is withheld for its benefit. That nay disappointed Sircar or worthless European may set himself up as a Medical practitioner by buying a few doses of quinine, castor-oil, opium, and tartar emetic, and giving these out to the sick under false and bombastic names, is a grievous wrong to legitimate medicine.

To shew the extent of the evil, the different classes of legitimate and illegitimate practitioners who exercise our profession here may be enumerated as follows:—1, Government Medical Officers; 2, Private European Physicians and Surgeons; 3, Doctors, Bachelors, and Licentiates of Medicine of the Calcutta University; 4, Graduates of the Calcutta Medical College; 5, Bengali and Hindustani Class Native Doctors, and Vernacular Licentiates; 6, Dental Surgeons; 7, Apothecaries; 8, Hospital Apprentices; 9, Unpassed Medical Students; 10, Vaccinators; 11 Midwives; 12, Homœopaths; 13, Hydropathists; 14, Hygieists; 15, Cholera-curers; 16, Amateur Quacks; 17, Women Doctors; 18, *Koberajes*; 19, *Hakeems*; 20, Barber-Surgeons; 21, *Baydas*; 22, *Fakeers*; 23, *Sunnyasis*; 24, Mulls; 25, Priests of Hindu Temples; 26, Charmers; 27, Exorcisers; 28, Pathucks (readers of sacred writ); and 29, Poison-extractors.

Now does not this afford ample evidence of the impunity with which anybody may at present turn a Doctor and play with the lives of his fellow-creatures? Does it not shew the necessity of some kind of check? Does it not loudly call for the interference of the legislature and extension of the English Medical Act to India? Surely the community is not safe when so many dangerous impostors are permitted to tamper with medicine and prostitute it to the attainment of their own selfish and wicked ends. Surely that social system is most unsound which looks upon such things with complacency and unconcern. Let us hope, therefore, that the day is not far distant when these evils will be put down by the strong arm of the law, and none but men who have taken the trouble of duly qualifying themselves for the Medical profession will be allowed to meddle with the health, honor, and lives of their fellow-creatures. Seconded by some such enactment, it is then, and then only, that we can hope for the full fruition of the noble end to which the efforts of this Association will be unremittingly directed, and which humanity and good policy alike demand at our hands. With the establishment of Universities and good Medical Schools all over the country, there is now little excuse for inaction in this matter. The supply of regular Medical men is increasing with every successive year, and no fear need any longer be entertained that there ever will be again a dearth of them. Mr. Robert Turnbull, the Secretary to the Justices of the Peace, tells me that during the past half-year the License-tax was paid by Practising Surgeons 32, Surgeon Dentists 3, Licentiates of Medicine 39, Apothecaries 9, Veterinary Surgeon 1, giving a grand total of 84 men, exclusive of Native Doctors and others.* Now,

* In 1869 the Licence-Tax was paid in Calcutta by 109 Medical Practitioners, Licentiates of Medicine and Apothecaries, and by 85 Hakeems and Koberajes (see the Administration Report of the Calcutta Municipality for 1869).

making every due allowance for errors on account of the haste in which this tax had to be collected, and for the omission of Native Doctors (of whom I am told there are from 60 to 70), we should not be far wrong if we put down the aggregate number at 150 men practising European medicine in Calcutta. There are also in this city 40 regular Druggist's shops, 7 Charitable Dispensaries, 3 large Hospitals, and several smaller establishments of the same kind.* So the Presidency at all events is already well stocked, and here the first trial might be made of affording protection to legitimate medicine. Then, as civilization advanced into the interior, and the people perceived their true interests, a general Act might be passed for the benefit of the whole country. That, I think, would be the wisest course to pursue at present, for, while I deeply lament the existing evils, I would equally deplore hasty legislation ere the public were sufficiently prepared to profit by it.

It might be considered foreign to the object of this Association to speak upon the Government Medical Service, but an account of the present state of the profession in this country would be clearly incomplete without a word being said about that most important part of it. The Indian Medical Service comprises the following classes of Officers:—1, Covenanted; 2, Uncovenanted; 3, Subordinate; 4, Native Doctor. The Covenanted Medical Officers belong all primarily to the Military Service, from which are supplied all the principal Civil Stations with Surgeons. The European members of the Uncovenanted Branch have charge of the smaller Civil Stations, and the Native are employed as Sub-Assistant Surgeons in charge of Jails and Dispensaries. The members of the Subordinate Establishment are all Military Apothecaries, but some of them have, of late, been made Honorary Assistant Surgeons and put in charge of Civil Medical duties. The Hindustani Class Native Doctors are employed as trained Assistants with Native Regiments, and the Bengali Class in Civil Jails and Dispensaries. A crisis has at length arrived when the interests of all these classes require to be seriously considered. The Civil Surgeon of the present day is no longer the only educated Medical man in a Mofussil Station; the Sub-Assistant Surgeon is very often as good, besides being his senior in years and experience; and in some places there are private practitioners and others in the employ of Planters and Zemindars, who are not willing to acknowledge his superiority. Under these altered circumstances the future position of the Covenanted Medical Service is a matter of great anxiety. Is the number of that Service to be maintained at

* Now 16 Hospitals, viz., General Hospital, Medical College Hospital, Native Hospital, Police Hospital, Pauper Hospital, Suburban Hospital, Howrah Hospital, Sakes's Street Hospital, Eye-Infirmity, Small-pox Hospital, 4 Lock Hospitals, 3 Lunatic Asylums; besides the Military Hospitals specially devoted to troops.

its former standard, so as not only to suffice for the Army, but also for all the Civil Stations in the country? Is the Government to continue to provide Medical Attendants at the public expence for its Civil Servants, when other practitioners are available at their private cost? Is the Native Army to have European or Native Medical Officers? Are the subordinate Medical Officers to be mere Apothecaries? Is the condition of the Uncovenanted Medical Service to be improved? All these are questions difficult to solve, and their settlement involves more or less the interests of all classes of the profession. Then the highly-educated Doctors of Medicine of the Indian Universities are another growing element of disturbance. Will they be satisfied with the position of Sub-Assistant Surgeons? or are they to hold higher situations? Again the increasing demand for vernacular practitioners makes it incumbent on Government to give them a better and more substantial education than they now receive; for, since in many cases, they are the sole Medical Advisers in whom to trust out of the Service, the public have a right to claim that they shall be properly educated. And, when the Native Doctors are taken out of the same class, will they not, too, expect more pay and to be allowed to perform duties of a higher description? Most of these questions are, I believe, already under consideration, or soon will be, in connection with the remodelling of the Bengal Medical Service, and it is to be hoped that such measures will be adopted as will fully satisfy the exigencies of the times.

To recapitulate the several matters I have already discussed I may state, 1, that, previous to the foundation of the Calcutta Medical College, the Medical profession in Bengal was represented, on the one hand, by a vast number of irregular, unqualified, incompetent, and ignorant Native practitioners, and, on the other, by the Covenanted Surgeons of Government; 2, that in the present day it comprises, besides the above classes, a large body of well-qualified Native Medical men, some independent European practitioners, some unqualified Medical Students, a new class of quacks who prescribe European drugs without any professional knowledge, and certain followers of false systems of therapeutics; 3, that to prevent deterioration in the ranks of the profession, as well as to advance its interests, the action of the Bengal Branch of the British Medical Association will be highly useful; 4, that to protect the rights of legitimate medicine, the English Medical Act should be extended to India, or a new Law enacted here by Government; 5, that owing to causes easily understood the relations of the different branches of the Government Medical Service are materially changed, and that a corresponding change is needed in their respective positions to adapt them to the altered circumstances of the times.

LECTURE IX.

ADDRESS ON RETIREMENT FROM THE PRESIDENTSHIP OF THE BENGAL BRANCH OF THE BRITISH MEDICAL ASSOCIATION. THE AVERAGE DURATION OF HUMAN LIFE IN INDIA. THE PROPHYLACTIC INFLUENCE OF VACCINATION. THE CONTAGIOUS THEORY OF CHOLERA.

March 10th, 1868.

GENTLEMEN,

IT is now my duty to retire from the post of President, and to introduce a successor. In the gentleman whom you have elected you will have an able and energetic officer, who, I feel sure, will infuse a new life into all our operations, and compensate for the short-comings of the past year.

The year which has just elapsed has not, however, been without results, as will be evident from the proceedings published in the *Indian Medical Gazette*. It is nearly five years since the Bengal Branch of the British Medical Association was established; and it is satisfactory to note that it has proved at least one thing, i.e., that there is no insuperable difficulty to its success. If each member of the profession did his part towards it, there is no institution in the country which offers a greater opportunity for usefulness. Important medical questions concerning pyæmia, osteomyelitis, cholera, small-pox, fever, dysentery, syphilis, drainage, water-supply, hospital construction, the status of the medical profession, &c., which are continually forcing themselves upon the public, can be nowhere else discussed with equal advantage. Had such associations existed from the dawn of our profession, it is probable we should have had now many more valuable facts than we have, and far less confusion. It is only comparatively lately that the value of such associations has been understood, even in Europe and America. In this country they are scarcely yet in their infancy. But if any substantial progress is to be made, they must be carefully nurtured and supported. Considering their vast influence on civilisation, they are deserving of every encouragement. They are calculated not only to advance science, but also to lend important assistance to Government on many occasions. They excite an interest in the pursuit of the profession which

without immeasurably profiting ourselves. If we be only convinced that our skill and efficiency must be measured by the extent of our knowledge, we shall have achieved one great triumph over routine and the blindness of theory; and we shall have been made sufficiently unselfish to admit that we have all much to learn from each other. It is in this spirit that I would urge our members to review our past operations, and to give us their support for the future. It is not right that where there should be many, a few only should toil and labour. Our number is sufficiently large to do much good if the attendance at our meetings were larger; and our funds are encouraging, if not highly prosperous. In time we may hope to possess a proper location and a library of our own. As our members become more numerous and active, we may also be able to maintain a Journal of our proceedings, which shall not be inferior to the one we had to discontinue last year.

As I have referred to the three classes of medical men, let me speak a few words regarding the relation between the Native Medical Profession and the Universities.

In one way the Universities hardly meet the medical wants of the country. As the nation is gradually awakening to the superiority of European medicine, the demand for medical men educated in our colleges is daily on the increase. The number of practitioners passed by the Universities is too small to keep pace with that demand, and their pretensions are too high to allow of their services being generally available to all classes of the community. The Universities aim at securing a high standard of education, and a class of English-speaking practitioners who shall not be inferior in attainments to the Graduates in Arts, Law, and Civil Engineering. This is very good, for it secures a high place for the profession, the members of which should act as so many centres of civilization. But the very superiority of the education necessarily limits the admissions to this class, and the vast majority of them belong to the lowest grade, or Licentiates. Indeed it has been a frequent subject of surprise, how few seem to care to aspire to the higher medical Degrees, and it has been questioned whether the institution of those Degrees was not premature. I believe the proper way to get an answer to these questions is to ascertain the native feeling upon the subject. The difficulties of the examinations have nothing to say to it. There are many native medical practitioners who are competent to pass any examination, but who do not wish to be M. Ds., as they get on very well without any such title. In this country every medical man is called a "doctor," whether he be a surgeon, physician, or apothecary; and no precedence is allowed on the score of academic distinctions. This is the case here even with Graduates of the British Universities. Consequently there is neither honor nor emolument to be gained by the possession of the Degree

of M. D. In the public service no distinction is made between an M. D. and an L. M. S., and promotion goes by seniority. In private practice, experience and ability are preferred to rank and high fees, and many a man who has an University Degree, enjoys a popularity second to none. This, it is to be hoped, will be remedied in time, but for the present it exercises a great influence upon the minds of many, who very naturally hang back from examinations which can confer on them no apparent advantages.

But the truth is that the growing demands of the country are not for M. Ds. or M. Bs., but for a large supply of practitioners of a lower class. There seems to be now a universal cry for more medical men, and every one who follows the profession of medicine finds employment enough to support himself with credit. As a necessary result of all this, more and more candidates are entering the profession every year. Our English and Vernacular classes are crowded with students anxious to qualify themselves in every branch of study, and to make themselves useful, not only as physicians and surgeons, but also as accoucheurs. This is a national movement, the popularity and success of which must be very gratifying to all friends of humanity. In bringing scientific medical aid to the reach of the humblest cottager, to supply dispensaries and drug-shops to every village in the country, and to rescue the ignorant from the impositions of charlatans, is indeed the work which is going on, and which I devoutly hope will prosper. This is being done, not so much by the Universities, as by the Vernacular Medical Schools which have been established now in so many parts of the country, and of which more are wanted in Oudh and other provinces of India. This is the class which needs still further development, for it is preposterous to suppose that the medical wants of two hundred millions of human beings can be adequately met through the medium of a foreign language. The education should be complete in all its parts, as it is in that way alone that we can demonstrate the superiority of the European over the ancient systems of medicine of this country. For this purpose, surgical and midwifery operations command greater advantages than ordinary therapeutics; for, as they are obvious to the dullest comprehensions, so they are also precisely the points in which the *koberajes* and *hakems* are most deficient. Up to this time the public have met with sad disappointment whenever they have applied to our Native Doctors for assistance in cases of difficult labor, and thus much discredit has been thrown upon the education of those practitioners. This is a defect which is about to be removed, and which, I trust, will never again occur. The Vernacular Medical Practitioners must, in the natural course of things, form the bulk of the profession, and therefore their professional education should be fully as sound and comprehensive as that of the English-speaking classes, if

efficient medical aid is to be provided for all classes of the population. It is immaterial that they are not connected with the Universities. The great point is that they are the men for the people, and, whether in or out of the Government Service, their importance to the country can never be exaggerated. Great additions must be made to this class; for, taking the whole of our present and passed pupils of every denomination, and in all parts of the country, they form but a small fraction of the number required, leaving large gaps to be filled up, and the sick sometimes many miles to travel ere they can reach the nearest doctor. There is therefore great room for improvement, and no time should be lost in securing a sufficient number of these men. They may not be, in the first instance, of the very best description, but there are times when any kind of medical aid is thankfully welcomed. In moments of national exigency, as on the occurrence of war or epidemics, even England is glad to avail herself of the services of apothecaries' assistants and unpassed medical students, although at ordinary times she has a redundancy of qualified medical men. How much greater then is the necessity here of sending forth into the country qualified recruits to fill the ranks of the profession, since even in times of peace, there is a great scarcity of them; and in seasons of war, famine, or epidemic visitations, which are here of such frequent occurrence, they cannot be improvised at all (*Vide* Rev. J. Long's letter).*

The function of the Universities is to educate a class of gentlemen who shall be the heads of the profession, and make valuable servants to the State.

" Calcutta, 2nd March 1863.

* MY DEAR DR. CHUCKERBUTTY,

I have much pleasure in giving you my views as to the working of the Bengali class in the Medical College.

I had long known the tremendous evils inflicted on the masses of this country by the quackery and ignorance of the native Medical Practitioners called Kobirajes the ignorance and helplessness of the poor along with their superstitious render them victims to these oriental quacks in a way far worse than is the case in Europe among Medical quacks.

The only practical remedy was to have a class of practitioners receiving a knowledge of European Medical Science through the medium of the Vernacular, these men would penetrate the interior easily, and charge moderate fees.

I watched the working of the Institution from the commencement, Dr. Jackson showed me the draft of the plan for the class which he submitted to Lord Dalhousie, the students at first were composed chiefly of Brahmans, and there were difficulties connected with their caste in their taking Hospital duty, but gradually this was overcome and particularly by the co-operation of that able and enlightened leader in Medical Reform, Madhu Sudhan Gupta.

Some of the College authorities objected to the class that the students could not be kept in Government employ after they had been appointed to Jails. The fact being that this was a sign of the Institution ceasing to be an exotic, inasmuch as they could make far more by private practice than by Government service, I have known some

The function of the Vernacular Schools is to create a class of working men for the people who shall form the bulk of the medical profession, and occupy ground untouched by the University Graduates. At the same time the Universities must exercise a certain influence over the Vernacular practitioners, who will have for their teachers and official superiors the University men.

I should like therefore to see the Graduates of the Universities at once take up their true position, which they can do by co-operating with this Association, and forming, under their separate leaderships, Vernacular Medical Societies wherever the materials exist for them. This will come to pass some day, and it will be a happy day for India when it does. Meanwhile, every man, who claims any interest in the country by birthright or adoption, should put his shoulders to the wheel, and see that, while he earns a living for himself, he also does something to advance the cause of progress. If this were done, our Association would not be deficient in numbers, nor powerless for good. But I will detain you no longer on this topic, as time is precious, and there are several valuable papers to be read. So I will thank you once more, and resign the chair to my eminent friend, Dr. Norman Chevers, who is already well-known to us as a former President.

THE AVERAGE DURATION OF HUMAN LIFE IN INDIA.

I will now speak a few words on the average duration of human life in India. This is a subject on which very little is known. But I will give here a few facts on it I collected so far back as 1856, and published in the Indian Annals in a Dispensary Report, with a view to rouse public attention.

Of the 7,125 cases submitted to analysis, 1,286 were admitted before the new books I had asked for could be procured, and consequently no register of the age and sex of these cases was kept, as there were no columns for the purpose in the Registers then in use.

Of the 5,839 patients whose ages and sexes are recorded, 4,835 were males and 1,004 females.

The minimum age recorded is one month, and the maximum one hundred and nine years. The latter was ascertained by a strict scrutiny of the political events during the life of the individual—he being an up-country scopy.

The sum of all ages, 1,61,779 years, 5 months and 15 days,

cases where ex-students realised as much as three or four hundred Rupees per month by practice in villages while a number had more than 100 Rupees monthly.

The country mainly suffers from a few leading diseases, the treatment of which is fully understood by these men as has frequently come under my own observation, and to meet the crying and pressing wants of the country in this respect we require the number of students in the Bengali Medical class to be quadrupled.

divided by 5,839, the total number of these cases, gives 27 years, 8 months and 14 $\frac{1}{2}$ days as the average duration of each life. This is a result on which I had originally intended to add a few observations, but, on second thoughts, I have resolved not to do so at present in consideration of the scantiness of my materials. It would be a very curious fact to ascertain by a more extended analysis if the above be the mean duration of life in this country or at least if it be the average age of the living. This can only be accomplished by a regular system of registration which is still a desideratum with us here.

I have distributed life from birth to 110 years into 23 periods. The first of these periods extends from birth to one year, the second from one to five years, and the rest consist each of five years in an ascending scale from the last mentioned age.

In the first period there are 93 patients, males 61, females 31.

In the second 319, males 195, and females 124.

In the third 227, males 166, females 61.

In the fourth 315, males 237, females 28.

In the fifth 809, males 715, females 94.

In the sixth 991, males 886, females 105.

In the seventh 1,080, males 913, females 167.

In the eighth 494, males 425, females 69.

In the ninth 704, males 573, females 131.

In the tenth 175, males 147, females 28.

In the eleventh 345, males 244, females 101.

In the twelfth 72, males 55, females 17.

In the thirteenth 141, males 109, females 32.

In the fourteenth 23, males 19, females 4.

In the fifteenth 34, males 27, females 7.

In the sixteenth 4, all males.

In the seventeenth 7, males 5, females 2.

In the eighteenth 2, both males.

In the nineteenth, none.

In the twentieth, none.

In the twenty-first, 1 male.

In the twenty-second, none.

In the twenty-third, 1 male.

Thus the largest number of males and females occur between 25 and 30, the largest proportion of females to males from birth to the age of 5 years, and males alone in the extreme maximum periods, while no cases are recorded from 85 to 95 and again from 100 to 105 years.

The number of cases in each successive period on either side of that from 25 to 30 seems to observe no rigid gradation of increase or decrease, though the latter is pretty evident if we take them a whole, especially towards the decline of life.

The following is a Tabular Statement of the above results :—

TABLE 1.

7,125 total number of cases.

1,286 age and sex not recorded.

5,839 age and sex recorded.

4,835 males.

1,004 females.

<i>Years.</i>	<i>Months.</i>	<i>Days.</i>	
0	1	0	Minimum age.
109	0	0	Maximum do.
1,61,779	5	15	Sum of all ages.
27	8	14½	Average duration of life.

No. of Cases	Period of Life.			Males.	Females.
85	Birth to	1 year	...	91	34
319	1 to	5 do.	...	193	124
227	5 to	10 do.	...	166	61
315	10 to	15 do.	...	287	29
809	15 to	20 do.	...	715	91
991	20 to	25 do.	...	880	103
1,080	25 to	30 do.	...	913	167
494	30 to	35 do.	...	425	69
704	35 to	40 do.	...	673	131
175	40 to	45 do.	...	117	28
315	45 to	50 do.	...	244	101
72	50 to	55 do.	...	55	17
141	55 to	60 do.	...	109	32
23	60 to	65 do.	...	19	4
34	65 to	70 do.	...	27	7
4	70 to	75 do.	...	4	0
7	75 to	80 do.	...	5	2
2	80 to	85 do.	...	2	0
0	85 to	90 do.	...	0	0
0	90 to	95 do.	...	0	0
1	95 to	100 do.	...	1	0
0	100 to	105 do.	...	0	0
1	105 to	110 do.	...	1	0
5,839	Total			4,835	1,004

This is a very low average, but not much lower than it was in England before the introduction of Sanitary improvements into her towns and villages. The former average duration of human life in England was about 39 years; it is now between 45 and 50. A similar increase under the same conditions has been recorded

also in Switzerland, Germany, France and other civilized countries. It is to be hoped, therefore, that it will be noticed likewise in India, as her drainage, water-supply, conservancy, food, &c, are improved. This is a subject of vast interest to all men of science, more especially to insurance offices; and now, as we have a Registrar-General and Health Officer, I trust ere long we shall be supplied with more reliable and satisfactory information upon it.*

THE PROPHYLACTIC INFLUENCE OF VACCINATION.

With regard to the Prophylactic influence of vaccination in guarding the human body against the attack of Small-Pox, I will submit the following extracts from my Report on the late Chitpore Small-Pox Hospital, dated 20th April 1865, pp. 25, 26.

"Under this head I have first to speak of the influence of vaccination and inoculation on the liability to Small-Pox.

"As a general proposition it is now everywhere admitted that the liability to Small-Pox is lessened by both these operations, but it is not allowed that it is altogether annulled as was first supposed. People who have been vaccinated or inoculated are still liable to attacks of Small-Pox, though in a diminished degree. This diminution of the risk is greater from inoculation than vaccination, and the popular belief in this case is perfectly correct. This is borne out by Table X, which gives 160 persons as having got Small-Pox after previous vaccination, whereas only sixty-five persons were affected with the disease after previous inoculation. This result, obtained in a country where inoculation has been the rule and vaccination the exception, is a most significant fact. But while inoculation reduces the liability to Small-Pox, its influence on the mortality, when the disease occurs, is far less than that of vaccination. While no deaths took place after re-vaccination, and only

* I should also point out that the disproportion of males to females here shown is by no means the natural relation of the sexes in this country. Such a disproportion could no where exist without a wilful sacrifice of female life. In some of the Rajput villages, where female infanticide prevails to avoid the heavy expenses connected with the marriage of daughters, this, or even a smaller, ratio of females to males may be the normal proportion. But in Calcutta the influence of such a cause is far less. The real causes of this disproportion are - 1, the great number of men who flock to Calcutta from without leaving behind their women, and 2, the Zenana seclusion of girls after they are 8 or 10 years old. The operation of the first cause is easily understood, as people generally come to Calcutta on business or for a temporary purpose, and have not always the wish nor the means to bring down their families with them. The influence of the second cause will be found in the social customs of the natives, which make it sinful for a married girl to show herself in public, and, as marriages take place among them at the early age of 8 or 9 years, it follows that after

29 per cent. of the once vaccinated died, the percentage of deaths among the inoculated was 30·3, that of the entirely unprotected being 52·2. The operation of inoculation itself gives rise to various pustules which cannot be distinguished from those of the spontaneous disease; but vaccination causes a modified affection, vaccinia, not to be confounded with the Small-Pox, the eruption of which can be seen to progress side by side with the vaccine pustules. In the Chitpore Hospital I have had twenty-eight instances of this association up to 13th April. In the majority of these the Small-Pox shewed itself within three to five days after vaccination, in some still later, and in one case not till the expiration of the 12th day. I do not think, therefore, that the liability to Small-Pox is ever altogether destroyed by vaccination or inoculation. Cases have not been at all uncommon of the occurrence of Small-Pox within the first year of the vaccination, nay within a few months. But though the liability to the disease is not abolished, the liability to death in such cases is certainly vastly reduced. These remarks apply, however, only to epidemic years. In ordinary times it is not usual for the vaccinated or the inoculated to take the Small-Pox. The percentage of mortality from Small-Pox in non-epidemic years is by no means very large; but in epidemic years it becomes positively appalling. As observed this year in the Chitpore Hospital it has been 33·71 per cent. of the admissions, and 43·53 of the sum of the deaths and recoveries. In the temporary Small-Pox Hospital for Natives in Bow Bazar Street in the year 1857 the total number of patients admitted was 121, and deaths fifty-four, giving thus 44·628 deaths per 100 of the admissions, or of the sum of the deaths and recoveries.

"In spite of the vast number of unprotected cases (351 out of 627) this year the ratio of mortality has been only 43·53. Dr. Gregory says the extremes of mortality he had seen in the Small-Pox Hospital, London, were 15 and 42 per cent., the latter chiefly in epidemic years. Now my mortality is not much different from this; and, considering the circumstances of the two countries, and that while vaccination is the rule in England, it is here the exception, it is wonderful that the difference is not much greater."

"A striking fact presented by Tables IV., V. and VI. is the gradual increase of the percentage of mortality in proportion to the length of the epidemic. This is explained by the relative proportions of Europeans and Natives in the different stages of the epidemic and also of males and females. In the earlier part of the time embraced by this Report the Europeans preponderated over the Natives, and there were very few females. In the later weeks the Natives were nearly twice as numerous as Europeans, and the proportion of Native females was also increased. Now, as

the death-rate is higher among the Natives than among the Europeans, it follows that with the increase of the former there was an increase also of the death-rate; and with the increase of the Native females a still further increase as they died oftener than Native males.

"Another interesting fact which I wish to record is, that not one case of infection occurred among the large number of persons employed in the Hospital."

THE CONTAGIOUS THEORY OF CHOLERA.

With reference to the contagious theory of cholera, I shall quote what I stated at the Meeting of the Bengal Branch of the British Medical Association, January 31st, 1870, in the debate on Dr. J. Murray's paper. I said that "I had not intended to speak on the present occasion, from the great respect I felt for the author of the paper, as the views advocated in it were in many respects diametrically opposed to my own. But from the turn the discussion has taken I find that I am bound in duty to express my opinion. I would do so, however, with all due respect to Dr. Murray. The two questions raised are the contagion and origin of cholera, and they are both most important to the practical physician. In asserting that cholera was a contagious disease the author had evidently in view certain practical measures in the treatment of cholera patients in reference to their admissibility into General Hospitals, their separation from relations and friends, and the necessity of quarantine.

"We have, therefore, to consider, not so much the abstract question of contagion, as whether cholera was such a contagious disease as to make it dangerous to admit persons affected with it into General Hospitals, to permit their friends and relatives to attend on them, and to allow them to enter places which had not been already attacked by the disease.

"There are certain diseases which are decidedly contagious, such as small-pox and typhus fever, and it is allowed on all hands that it is dangerous to admit persons suffering from them among other patients. There are other diseases, again, the contagion of which is very slight or doubtful, such as catarrh and influenza, and these are unhesitatingly admitted into General Hospitals. Now it has never been proved that cholera was more contagious (if at all) than either of these latter affections. I have had a very large experience of this disease during my twenty years connection with the Medical College Hospital, and I cannot recall to mind a single instance in which it could be satisfactorily proved that the disease had been contracted by contagion from cholera patients. I admit that cholera attacks have occasionally occurred among the patients in the hospital suffering from

other diseases, but I deny that their percentage was greater than among an equal number of individuals out of the hospital. I would make the same remark with regard to the students of the College, who are a portion of the general community, and who do not suffer in a greater ratio than any other section of it. I have never known a case of death from cholera among the Medical Officers of the hospitals with which I have been connected, and the other attendants upon the sick enjoy an equal immunity.

"I would, therefore, enter a strong protest against the theory of contagion, especially as I believe that the author considered it to be of a most dangerous character, and that he was eager to take advantage of any opportunity to separate the cholera from the general sick, and to establish special cholera hospitals not only in Calcutta, but throughout the country. An instance of the length to which his enthusiasm would carry him had occurred not very long ago in the College Hospital. An opportunity had occurred for establishing a cholera hospital, and Dr. Murray was most urgent that a house should be immediately hired, and all the cholera sick sent to it. The only building available for the purpose was a small demi-upper-roomed house, badly ventilated, surrounded by all kinds of abominations, and situated in the filthiest locality in the neighbourhood; and rather than lose the opportunity, into this building we were told to place all our cholera patients, European and Native, male and female, till they were convalescent, when they were to be brought back to the College Hospital. When this proposal was submitted to a committee of the hospital officers, they unanimously rejected it as they had no fear of the contagion of cholera, and as they were not prepared to sacrifice their cholera patients by consigning them to almost certain death. Speaking for myself, I would rather give my cholera patients the smallest nook in the college hospital than send them to such a place. When I advocated a special hospital for cholera cases, it was only as a matter of convenience, as in my experience the proportion of cholera deaths to deaths from other causes was one in every three, or one to two. Next, as to the danger of cholera spreading by contagion to the friends and relatives of the sick, I do not believe in any such thing. I have never known a case in which they were affected, except under certain circumstances. I will cite a case to illustrate this point. A family of four came from Cuttack to Calcutta about 18 months ago. They took up their residence in a damp lower-roomed house in a most unhealthy locality, and got their drinking water from a bad tank. The very first day the two children were attacked and carried off. Next the mother and father were attacked, but immediately removed to a better house in a more healthy locality. The mother

died, the father recovered, and not another person in the second house, although crowded with inmates, suffered. Here it might be said that it was the water which caused the attacks, and very probably it did, but it did it in no other sense than the "unripe fruit, &c.," of the author. Attacks of cholera were caused not only by bad air, bad water, and unripe fruit, but also by other articles of food either from bad quality or from peculiar idiosyncrasies of individuals. The water did not in this case communicate a contagious disease, for only those suffered who had actually drunk it and nobody else. I would repeat then that there is no danger of the disease spreading by contagion to the friends and relatives of the sick, and I would warn the gentlemen assembled that were a contrary opinion to go forth from them that day, it might cause the greatest distress and alarm to the public without any reasonable excuse whatever.

"I will now speak of the portability of cholera. This question necessarily pre-supposes the existence of a poison or material borne in the bodies or clothes of persons. The evidence upon this point was of the following character :—A thousand persons leave Calcutta, while there is cholera in it, apparently in good health. They disperse in different directions. But upon the arrival of one of the number at a particular village he is seized with cholera, and a great many other persons in it get it about the same time. The conclusion is immediately jumped at, that the new-comer had brought the disease to the village, as it had no cholera before he came to it, and as he came from an infected city. And all this, although the nine hundred and ninety-nine who left the city under precisely similar circumstances, did not carry the disease to the places to which they went. Then, again, a man, apparently in good health, arrives at a village where cholera is raging. He gets the disease and dies of it, and the inference is drawn that he got it because he was a new-comer. This latter was a logical deduction, for there being cholera in the atmosphere of the village, and the constitution of the new-comer being disturbed by the change of climate, water, &c., implied by a change of place, he was naturally predisposed to suffer from the disease more than its permanent residents. The former conclusion was erroneous, for cholera may have existed in the atmosphere of the village before the man from the infected city came, and he may have been the first to suffer, not because he brought the disease with him, but because he was probably the most predisposed from the accident of change of place. Dr. Macnamara has stated that although most parts of the world have suffered from cholera, originally derived from India, Australia and the Andamans are still exempted. That is a most important fact. The Andamans, upon which Dr. Macnamara laid so much stress, although nearer

than Australia, have yet not the same value as the latter. The commercial intercourse between the Australian and Indian Ports has been of far greater duration and extent. Hundreds and thousands of ships have plied between those ports, and yet the disease has not been carried to Australia. Here were instances of ships loaded with merchandise and men passing from the infected ports of India to the uninfected ports of Australia, and yet the latter had no cholera. How was this? Because the peculiar atmospheric influence necessary to the development of cholera was absent, or had not yet shown itself, in Australia. Had it been there the disease would have occurred, and the ships would have got the blame of having carried it from India. This naturally brings us to the question of quarantine, which rested entirely on this notion of portability. If Dr. Murray's ideas were correct, that the cholera poison was a germ which reproduced itself within the human body, and could act by contagion, then the question as to what should be done with a cholera case on boardship became one of the most perplexing character. The longer he was permitted to remain on boardship, the greater would be the danger to the passengers and crew, and a conscientious Captain would have to consider, whether he should not throw the man overboard, to prevent his body becoming the nursery of cholera germs, especially if he could not land him on account of quarantine. The fact of the matter is, there is a great deal said upon this subject upon very little knowledge. We know that the true contagious diseases have a period of incubation of a definite kind in each case. What is the length of this incubative stage of cholera? Is it 24 hours, 48 hours, one week, one month, or six months? Nobody seemed to have any information upon that subject, and yet instead of confessing this ignorance, quarantine is recommended for ships and passengers at the end of a voyage, to do that in a few days which the voyage itself had not accomplished in a month. Could absurdity go any further?

"The last matter I shall allude to is the nature of the so-called cholera poison. On this point, as has been very ably pointed out by my friend, Dr. D. B. Smith, the author of the paper seems to have made up his mind that it was an animal germ; for he spoke of its history out of the body, the channels by which it entered the body, its history within the body, the channels by which it escaped from the body, its behaviour under reagents, and the explanations which that afforded of his own plans of treatment. From all this one might infer that he had seen and handled this germ. But a little further on he stated that the germ "was invisible," and that proved that he had not really seen it. In truth nobody had ever seen it, and the whole hypothesis about it was based on the supposition that it was something like the

virus of small-pox, and that therefore it necessarily possessed analogous stages. I deny that there is any poison, vegetable, animal, or mineral, required to produce the phenomena of cholera. I conceive that cholera is generated, in the same manner as catarrh and rheumatism, by an atmospheric influence. It was not maintained that catarrh and rheumatism were produced by any poison introduced into the body from without. No more was cholera produced by any poison introduced into the body from without. Catarrh and rheumatism arose from exposure to cold and damp, and it might be said that the poison here was generated within the body. But that was only begging the question, for nobody had ever proved the presence of any poison in the blood in these cases. All that we knew was, that a morbid process was set up in the body by the chill, and that the force of it fell upon the lungs or the joints, according as the case was one of catarrh or rheumatism. Similarly in cholera a morbid process is set up in the body by an atmospheric influence, and the force of it falls upon the alimentary canal. The morbid process selects for its operation that part of the body which is most susceptible to it. This atmospheric influence is a matter of inference of the same kind as the law of gravitation. It was a common observation for more than a thousand years that bodies fell to the earth, but the law of gravitation was not known till it was discovered by a philosopher. We do not know at present what the nature of the influence is which produces cholera. Probably it is generated by variations of temperature, moisture, electricity, and other atmospheric phenomena. It is not identical with that which produces catarrh and rheumatism, but it is analogous to it, although of a peculiar nature. This influence might be limited to a confined area, or it might overspread the whole face of the earth. It might come into action quite suddenly, and last for one week or six months, and then as suddenly disappear without our being able to discern its cause. I will mention one case to illustrate this point. Lately for about three months the cholera ward of the Medical College Hospital was entirely empty. All at once a change took place in the weather. The sky became cloudy and the temperature warm, leading the incautious to change their winter garb for a lighter one. Then there was rain, and chilly weather. Now, on the very first day of the rain, cholera made its appearance, and cases of the most virulent type poured into the hospital in great numbers. Here the disease was evidently produced by the action of chill upon the skin, favoured by the imprudent change of clothing. With these few remarks I shall conclude for the present, but before I do so I would repeat that I do not believe in the contagion of cholera; that I do not consider that there is any danger in admitting cholera cases into

a General Hospital ; that I do not admit that cholera ever spreads from the sick to their attendants ; that I do not believe in the portability of cholera ; that I do not believe that there is any such thing as a cholera germ ; and that I think that the disease arises from an atmospheric influence, the precise nature of which is not yet definitely determined."

LECTURE X.

THIRTY-SIXTH INTRODUCTORY ADDRESS TO STUDENTS OF THE CALCUTTA MEDICAL COLLEGE, CONCLUDING WITH A BRIEF CONSIDERATION OF THE QUESTION OF NATIONAL EDUCATION FOR INDIA.

June 15th, 1870.

GENTLEMEN,

WE have met here to-day to open the 36th Session of the Bengal Medical College, to which I offer you, in the name of my colleagues and myself, a most hearty welcome. The Thirty-five Introductory Addresses which have been delivered in former years have nearly exhausted every topic of interest, and so, I fear, I shall tire your patience by dwelling again upon the same subjects. I shall nevertheless repeat the advice which has been given you so often, and so much more impressively before : Regard the study of your profession not only as a means of living, but also as an earnest preparation for the discharge of a most solemn and responsible duty,—the care of human life.

The curriculum of the College very plainly shows you what you will have to learn, and how your education is to be regulated. You are all supposed to have had some preparatory training. Those of you who belong to the Primary Class have had this in English, and those others who belong to the Vernacular Classes, in Bengali or Hindustani. The quality of that training wholly depends on the knowledge and habits of study you may have acquired, rather than the language in which you have been educated. If you have had on the whole a liberal education and been used to hard work, you will find your new occupation comparatively agreeable, for at every step of your progress you will learn new truths and natural wonders which will interest and amuse you. If on the other hand you have had an indifferent education and not been used to hard work, you will meet with great difficulty at the outset, and your deficiencies will vex and thwart you through the whole of your career. I might easily illustrate these positions by living instances, but you will very soon find them out yourselves. The complaint I often hear made by persons engaged in other walks of life is, that our Native Medical Practitioners, as a

rule, are very deficient in general education and public spirit. I will freely admit that this is an exaggeration, for on more than one occasion our students have been the pioneers of Indian civilization. At the same time the opinion would not be so widely held unless there were some grounds for entertaining it. The fact of the matter is we cannot always get to come to this Collège the most highly educated, and, therefore, it is no matter of surprise that there should be some noticeable deficiency occasionally in these respects in such as we have. But this, after all, is a small matter, and will mend itself in time.

To return from this digression, I will give you credit for a careful preparatory training, which, I said, will make your task comparatively agreeable. Do not understand from this that it will be therefore the less arduous. You will be sadly disappointed if you do so. No, gentlemen, your work must be hard, and will not admit of any compromise. The first truth you will realize is that in everything you must be *taught*, and that there is nothing you can learn yourselves alone without some previous *teaching*. The very names employed in books are *technical terms*, which you have never heard before, and of the meanings of which you have not the least idea. Even their common synonyms in English are almost as strange to you as the scientific expressions themselves; for, although you may have learnt your grammar, arithmetic, mathematics, geography, history, poetry, &c., you know little or nothing of common speech in English. Your own common speech is in the vernaculars, in which you know all the familiar objects of your native country. Similarly an Englishman's common speech relates to objects familiar to him in England. You have hence a double difficulty at the very beginning of your student-life; first, to familiarize yourselves with technical terms, and, secondly, to learn their meanings objectively from practical demonstrations. It behoves you therefore to be very regular in your attendance, for, if you miss a single lesson, it will remain a break in the chain of your ideas, which will constantly turn up, and cast an obscurity upon the whole work of the Session. During the first year of your attendance I would advise you to use all your senses as well as your memory. While listening to the lectures of your Professors, you should see, smell, and handle the various objects he places before you. In this way you will learn to associate the things with their names and characters. You may afterwards write out from memory what you have learnt, and correct your impressions by referring to some text books upon the subjects. During the first year I would not advise you to attempt to take notes *at lectures*. If you do, the unfamiliar names will be a great stumbling block to you, and you will lose the opportunity of examining the things which are shown. That will be a grievous error. Even when

you use all your senses at the first lectures, you will find that the impressions left on your minds are neither very clear nor very permanent. You will require, in addition, a more practical method, and that will be supplied you in what are called the practical classes. Now supposing you have attended lectures on Anatomy, Botany, Zoology, and Chemistry, you will be given the opportunity of dissecting, and making experiments with your own hands. This will be to you a most important work, in which you will be helped by teachers as well as books. It will not be merely an intellectual exercise, for that you might obtain to a great extent by means of illustrative diagrams and specimens. Its chief object will be to teach you to use your own hands, and to enable you to recognize and separate structures from each other, and to note changes of composition and decomposition as they actually take place. The oftener you practise dissections and experiments, the greater will be your knowledge and self-confidence, and the fitter will you grow to prosecute your further studies. The College curriculum very wisely therefore requires you to master these subjects first. In your second year you will have added to your studies Physiology and Materia Medica. Although these may at first sight seem to be new branches of knowledge, on examination you will find that your first year's education will be of great assistance to you now. The things and their names, at all events, will be more or less familiar to you, and, as you will now have also to attend the hospital, the diseases and medicines you will there see will also help you to comprehend the rest of the instruction. You will do well now to take notes at lectures, and also at the bedside of the patients in the hospital. The lectures will now give you a good deal of information which you cannot obtain from any single book, and they will draw your attention to salient points, which you should try to preserve in writing. You must recollect that 70 lectures is the prescribed limit of a course, and that to compress his subject into those 70, and yet to bring up his course to the present state of knowledge, will demand no small labour and judgment on the part of each Professor. He has to read every book which treats of his speciality, and to extract from it any thing new he may glean. All these books are not accessible to students, and even if they were, the time to learn them could not be had during their college career; nor should they gain much even if they read them; for the manufacture of books is a trade, and the addition to science is not to be measured by the bulk of each publication. The Professor will do his part faithfully, and, where he cannot be exhaustive, he will certainly try to be a safe guide. I hope now I have said enough to show you the necessity of taking notes of lectures. The practice of taking notes at the bedside is equally important. It will fix

in your minds the names of diseases and accidents, and of the remedies employed in each case. In your second year you will not be fit to do more. At the end of the second year, those of you who belong to the Vernacular Département will be entitled to pass their Junior Examinations. But practically many of them will have to go on with the same studies for another year. The whole of the Primary Class must go on for a third year ere they are entitled to appear at the Junior Examinations. These Junior Examinations are a sort of landmark between the junior and senior studies. After they are passed you will begin to attend the senior courses at the college, and you will be now called upon also to perform responsible clinical duties in the hospital. The difference between the junior and senior courses will not fail to strike you in some respects. In the former, besides attendance on lectures, you had to dissect and experiment with your own hands; in the latter you will have simply to attend on lectures. That is exactly the case as far as it relates to the systematic courses. But you are grievously deceived if you imagine that by attendance on systematic lectures alone you will become skillful Medical Practitioners. Systematic courses are only a means to an end. They will serve you as good guides to the knowledge of your profession; but they will not, and they cannot, give you the training you want to become successful practitioners.

The systematic courses will teach you the principal objects of your profession. They are as follows:—1 Therapeutics or the healing art, 2 Prophylaxis or the prevention of disease, 3 Hygiene or the preservation of health, and 4 Medical Jurisprudence or legal medicine.

The study of the healing art will necessarily most attract your attention, for it is by this that you are to gain your livelihood and to make your reputation as successful practitioners. It is a subject, however, of vast extent, which will demand on your part great perseverance and toil ere you can make any satisfactory progress. It will tax your highest energies and intelligence, and remain the main business of your life. You will now find that, as in the junior courses you had to learn healthy structures, healthy functions, physiological chemistry, and actions of medicines, in the senior courses you have to study diseased structures, diseased functions, diseased chemistry, and the applications of remedies. These will constitute four general subjects, viz., Morbid Anatomy, General Pathology, Morbid Chemistry, and principles of Therapeutics. And it would have been well for you if you could have got a separate course of lectures upon each of them. But our college has not yet got to a sufficient state of perfection to hold out that prospect. They will be treated of, however, more or less departmentally, for the present, under other heads.

Thus they will receive consideration in the courses of lectures on Medicine, Surgery, Midwifery, Ophthalmology, and Dentistry; and the Hospital Officers will give you constant instruction upon them in the clinical wards and at the dead-house. So, if you will only work, you will have ample opportunities of making yourselves thoroughly acquainted with them. In speaking upon this subject I have already incidentally named the college courses specially devoted to the teaching of the healing art. These systematic courses have their advantages as well as their disadvantages. Their most prominent disadvantage is that they cannot teach you actual practice. But short of that they have many advantages. First of all they will give you a general outline of each subject; secondly, they will lay down principles and discuss doctrines; thirdly, they will describe diseases and accidents, both general and local, and their plans of treatment in connected series; and fourthly, they will give you a vast mass of experience borrowed from all ages and countries. This can be conveniently done only in the lecture-room; the hospital is no place for it, where other things of still greater importance have to be attended to. I hope I have sufficiently succeeded in pointing out the advantages of a systematic course of lectures. But there remains one more which must not be overlooked; and that is the weekly examinations which are held. These weekly examinations are not only a test of the progress of your knowledge, but they should likewise be the greatest incentive to study, for they will shew you your proficiency or otherwise as compared with your fellow-students, and afford you the opportunity of correcting yourselves. To make the fullest use of these lectures you must take copious notes, and mutually assist each other when you have failed to understand any points. Believe me the habit of making notes is very essential; and, if you do not cultivate it daily, you will cut very sorry figures at the written examinations. The habit of taking notes, besides, will give precision to your ideas and orthography, and render you apt and expert at answering questions and in speaking.

The study of Prophylaxis goes hand in hand with the study of the healing art. It is not so altogether unremunerative as the term *prevention of disease* might seem to imply. For instance, vaccination, which belongs to this department, finds employment to a large number of medical men who have to be paid for their services. Indeed the public are either unacquainted with the prophylactic measures, or are incapable of using them without medical advice. In neither case, therefore, is prophylaxis a loss to the profession, while it is of undoubted benefit to the public in the saving of life and health. Some of the prophylactic measures are enforced by legal enactments, and interfere more or less

with the liberty of the subject, as they are necessarily addressed to individuals, and penalties are attached to their disobedience. The majority are left to the discretion of the medical profession, so that each practitioner may exercise his judgment in favor of his clients. But whether enforced by law or not, the knowledge of prophylactics in practice is sure to be found of immense advantage to both physicians and patients. You should not hence neglect this study, nor look upon it as an abuse of humanity.

Hygiene, or the preservation of health, will be the third object of your studies. The laws relating to this department are applicable to individuals as well as communities. In the special course of lectures you will get on this subject, you will be taught first, their value in reference to public health. Thus air, water, conservancy, drainage, and ventilation, the conditions of which affect bodies of men, will be discussed in detail. You will be then gradually led on to food, clothing, exercise, climate, and habitations. The consideration of these too has more or less public interest, especially in reference to troops, marines, emigrants, prisoners, and other bodies of men, who have to be fed on rations, dressed in uniforms, drilled to labour, and confined in quarters measured by the cubic space. But it has also a special interest to the practitioner of medicine and surgery. The regulation of the diet, exercise, clothing, and habitation, is a powerful adjuvant in the treatment of disease; and indeed often a *sine qua non*. This is believed to be so important that it always forms an essential part of a course of lectures on Therapeutics. The study of Hygiene therefore has a double interest, first, as regards public health, and secondly, as regards the treatment of disease. In the prosecution of this study you will be practically taught the different modes of examining air, water, food, ventilation, cubic and superficial space, &c., and I need hardly insist upon the necessity of your paying the greatest attention to all the instruction you will receive under these heads. Remember, that as educated medical men, you will often be consulted by public bodies and Government, and called upon for your opinion upon such matters. It will be a great mortification to you if you should feel on these occasions that you are incompetent to form a correct judgment, and a discouragement to your clients to find that their medical adviser is deficient in a matter of such vital consequence.

The study of Medical Jurisprudence or legal medicine, is intended to assist the administration of justice in the detection of crime, protection of innocence, and preservation of property. Under the first of these heads are included two classes of crimes, viz.—1, offences of violence, and 2, poisoning. Under the second, false accusations, and under the third, imputations of insanity and deliberate impositions. These are all subjects in which the welfare of society is

deeply concerned, and on which the evidence of a skilful medical practitioner is of the highest moment. The successful prosecution of this study will depend, however, entirely upon the extent of your attainments in the other branches of your profession to which I have already alluded. Thus to judge of a violent injury, you must be well up in Anatomy and Surgery; to determine a case of poisoning, you must be well up in Chemistry, Materia Medica, and Morbid Anatomy; and so on. Upon this important subject also you will have a special course of lectures, and it will be your own fault if you do not avail yourselves of it to the utmost of your ability.

These are all the senior college courses you will have to attend. I wish we had two more chairs, one of Pathology and one of Psychological medicine. But we must be thankful that we have so many; for there are not wanting persons who can see no good in the delivery of lectures. I hope I have said enough to impress upon your minds their unquestionable value. The disadvantages of the systematic courses are easily corrected, and it is for this purpose that you are required to do duty in the hospital. I have told you before that the chief disadvantage is, that they cannot teach you actual practice. Now the hospital is the great school for supplying that deficiency. It is here that all your theoretical knowledge will be put to the practical test, and it is here that you will really learn the *art* of your profession as distinguished from its *science*. Some people can find no difference between the *art* and the *science*, and so believe that they both mean one and the same thing. This is a great mistake. The college will teach you the *science*, and the hospital the *art*. Neither of them alone will make you educated physicians and surgeons. So, do not fancy that because you might shine in the college classes, therefore you could neglect the hospital, nor conversely; that because you might make good dressers and clinical clerks, therefore you could neglect the college classes. They are both necessary to one another. In the hospital you will get some practical courses, such as on Operative Surgery, Physical Diagnosis, and bedside instruction. But it is your daily duties which will be most important to you. You will have to dress, bandage, and in some cases also, to operate with your own hands. You will have to write out the history and symptoms of every case of disease and accident; you will have to examine physically, microscopically, and chemically all morbid products and excretions; you will have to learn the uses of the stethoscope, speculum, ophthalmoscope, laryngoscope, &c.; you will have to assist at operations and *post mortem* examinations; you will have to receive and admit patients, and occasionally to prescribe for them some immediate remedy; you will have to watch over the more important cases of sickness, injuries, and

operations. And, in short, you will be in a truly responsible position, with the advantage of being under the immediate eye and guidance of your teachers and superiors. You ought to appreciate all this as a great blessing; for, were you to be launched forth into the world with merely the college education, and without the correcting influence of hospital practice, you would have many years of bitter disappointment before you could form some settled ideas of treatment.

The time of your attendance in the senior department will be one or two years, according as you belong to the vernacular or the English class. In some instances the period will be longer from accidental causes. On the completion of your senior studies you will have to pass the final examinations, and if you are successful, you will be declared qualified practitioners. With that, your connection with this institution will cease, and then you will each move in his own sphere of usefulness. Most of you will take service under Government, some under public companies or private firms, and the remainder will begin private practice. It will be some years before you can make much money which-over of these you may choose. The advantages of the Service will be that you will exactly know what you are to get every month, and being placed in stations where European medicine is little known, you will have the opportunity of making your profession popular and its blessings widely diffused. The disadvantages are, that although you will get promotion, your pay will never enable you to save much, nor will you be always in positions to make a fortune by private practice. The disadvantages of private practice will be, that your income will be very uncertain, and that you will have little chance of getting on at all without the aid of some influential friends. But even under the most favorable circumstances, you will have to work hard and mostly gratuitously at first for some years ere the public will place much confidence in you. Once, however, you have got up a name, your receipts will be much larger than in any kind of service, and if you only steadily persevere, your success will be certain. The same will happen also if you acquire a reputation for skill in the Government service, and then settle down in practice; and this course will be especially beneficial if you have no friends to back you at the commencement. There is another course which some of you may pursue; i. e. you may go to England and come out in the Covenanted Medical Service. You cannot therefore fairly complain that you are absolutely shut out from any medical appointment. You have your choice of entering the higher or the lower service by complying with its conditions, and whichever you enter, you must rise through its grades according to rules. At the same time I do not for a moment deny that you will not be so well paid as the

other departments of the public service. Personally, I should be glad to see your salaries regulated on the same scale as those of the judicial officers. But there is one thing which must encourage you to hope, and that is, that the prospects of your profession must improve as the country grows richer and more prosperous. If trade and agriculture flourish, and the other classes of the community make more money, the earnings of the medical practitioners must also increase; and so, if you are not in the same position with judicial officers in point of salary, you will be in a better position in respect of private practice. I have been connected now with this College for upwards of 27 years, and seen something of its numerous alumni and their progress. Many of those who belonged to the first band of Diploma-holders are dead and gone, and so likewise some of the other bands who have followed them, down to the present time. But the vast majority survive, and are in active employment. Not one of them has ever been known to starve if he have been at all faithful to his profession, and several have become absolutely rich. In Calcutta itself there is a large field for private practice. Whereas 30 years ago very few believed that a Native Graduate of Medicine could get a living unless he entered Government service, the Administration Report of the Calcutta Municipality for 1869 shews that there were in this town no less than 109 Medical Practitioners, Licentiates of Medicine and Apothecaries, and 35 Native Doctors and Koberages, making a grand total of 144 who had paid for Licenses during the year to practice medicine. This is a pretty large number; but it may be presumed that there were several more who had not yet taken out a license. To this we have to add the practitioners located in the suburbs; and then we shall not be far wrong if we assume the total number, in and about Calcutta, to be somewhere about 200. It will be observed that only a small proportion of these are described as Native Doctors and Koberages. It is obvious that by *Native Doctors*, is here meant *Hakeems*, and not vernacular apothecaries. Even this small number will shortly disappear, and then the whole field will be left open to you. As here, so also all over India, the prospects of medical practice are rapidly improving. The progress of our railways has already effected a revolution; and a few years hence, when the whole system is completed, the resources of the country will be so largely developed, and civilization will be so much advanced, that the demand for European medicine is sure to become universal. To meet this great demand we have our English and Vernacular classes in Calcutta, Bombay, Madras, &c. The class of practitioners educated in English will never suffice for the wants of the country. They will have to be largely supplemented by the vernacular classes; and the sooner that

necessity is fully realized, the better will it be for the interests of India. In saying this I do not for a moment question the superiority of the English class. The English class has advantages which the vernacular classes cannot expect to possess for a very long time to come. The English language is the key to a vast medical literature, and an introduction to almost every nationality on the face of the earth. The vernaculars have yet to create their medical literature, and are useful only in dealing with the natives of this country. There can be, therefore, no comparison between the two. I myself am a strong advocate of the English education: first, because it opens a rich literature to the student, and secondly, because it fits him to serve in any province of India or other parts of Her Majesty's dominions. At the same time I cannot overlook the vast advantages of the vernacular classes. The vernacular languages are your mother tongues. They cost you little trouble and expense, and the instruction given in them you thoroughly understand. Cheapness and facility of comprehension are hence two recommendations in their favor. Now, instruction in the art and science of Medicine and Surgery in the vernaculars you already have. This part of your education is conducted under teachers who take a pride in the discharge of their duties. The most prominent defect at present is the want of a sufficient number of vernacular medical books, and that deprives you of the opportunity of self-improvement by reading in the vernaculars. This is a real misfortune, but one which those of you who have had an English education can easily, and ought to, remove. The work is simple enough, being merely to translate from English into the vernaculars. This is a kind of work which is carried on in all civilized countries, and thus all valuable books are being constantly rendered from one language into another among all European nations. And if this is done by those who have a rich medical literature of their own, how much more must it be required by a people whose medical literature is scarcely yet in its infancy! I would advise you therefore to translate from English into the vernaculars, every medical work you can manage to get. If every one of you did something in this line, you would soon possess a large stock of vernacular works which would be the best bequest you could make to your countrymen. A good beginning for this has already been made. The works of Pundit Madusodun Gupta, Doorga Dass Kerr, Gungapersad Mookerjee, Meer Ashraff Ally, and others, are in the hands of most vernacular students. But all this is a mere drop in the ocean. You ought to have every standard work translated into the vernaculars; but if that should be found too expensive, you should have at least all the good English manuals so translated; for, until you do this, the great want of the vernacular medical schools cannot be adequately supplied.

Now I must say a few words on the necessity of keeping up your studies after you leave this college. Do not fancy when you have received your licenses to practice that you have no further need of study. If you do, you will be greatly mistaken, and find yourselves in a short time behind the age. If you wish to be up to the day, your whole life must be one of continued study. Look at the department of surgery alone. New appliances, new remedies, new instruments, new modes of operation, and new plans of treatment are being continually introduced into practice. The consequence is, that what was considered good twenty-five years ago, is now antiquated and laid aside. All this betokens improvement, and the man who would move in the dull routine which he had learnt a quarter of a century back, though experienced, will be wanting in his duty to his clients. But that is not all. He will also suffer in his pocket. The new competitors for practice will not hesitate to expose his shortcomings, and as there would be now a new generation who would know nothing of his antecedents, they would naturally leave him and go to nabler and better-informed men.

Next to private study, the best exercise for you will be to make contributions to Medical Societies and Journals. This will compel you to note, think, and speak with care, and to place your ideas and observations before your brother practitioners, from whom in return you will learn theirs.

Lastly, you should form yourselves into an Association, not only for mutual improvement, but also for protection from wrong, and a just representation of your professional interests and opinions. Another thing I would recommend you to do is, that each of you should provide himself with a copy of the new *Nomenclature of Diseases* issued by the Royal College of Physicians of London. It is very good; and if you peruse it carefully and repeatedly, you will not only become familiar with its contents, but your curiosity will be excited to read upon the various subjects briefly noticed therein, as you will find the information you already possess defective and unsatisfactory on some of them.

NATIONAL EDUCATION IN INDIA.

I shall next draw your particular attention to the question of *National Education in India*—a great controversy on which has been going on for some time. In dealing with this subject it will be necessary to take a brief review of the progress of (1) *Oriental Classical Education*; (2) *Vernacular Education*; and (3) *English Education in this country*.

I. ORIENTAL, CLASSICAL EDUCATION.

The two classical languages, cultivated in this country are the Sanskrit and Arabic.

Sanscrit.—The Sanskrit is intimately incorporated with the Religion, History, Law, Science, Philosophy, and Literature of the Hindus. It is one of the most ancient of languages, and “a knowledge of it,” in the words of Mr. E. C. Bayley, “was the key which so unexpectedly unlocked the treasures of philology.” Before the Mahomedan conquest it was extensively studied by the Brahmins, and was a sort of Freemasonry among that learned caste all over India. But it was never learnt by women nor by the other castes, as a general rule, into which Indian Society is divided. During the Mahomedan reigns the cultivation of it continued in the same way, although suffering very materially under the foreign rule; and it was not till several years after the firm establishment of the British Government, that the knowledge of it was made accessible to all classes. It is a language extremely difficult to learn, and a fair knowledge of which cannot be acquired in one or two years. It is never used in the ordinary transactions of life, never spoken except by learned men, and devoid of the light of modern civilization. Yet in the beginning of this century it was seriously adopted as the medium of national education in our Oriental Colleges, with the result that their alumni, as described by Macaulay, were utterly useless for all worldly business, and had to be maintained as life pensioners of Government. This Oriental mania did not finally die out till the vigorous administration of Lord William Bentinck, who entirely changed the educational policy, established English schools, and instituted a careful enquiry into the state of vernacular education. Now the head quarters of Sanscrit learning are the Sanscrit Colleges of Calcutta and Beares, and, as the classical origin of most of the vernacular languages, a knowledge of it is required by the Indian Universities. As a dead language it occupies here the same position as Greek and Latin do in Europe. And therefore, although it has a strong claim to our respect and attention, the Sanscrit can never be used as the means of national education.

Arabic.—The Arabic is intimately incorporated with the Religion, History, Law, Science, Philosophy and Literature of the Mahomedans. It is the depository of the civilization of the Saracenic period, and was introduced into India by her Mahomedan conquerors. Although the Mahomedans established no public schools, colleges, and universities, like the British Government, in India, there were attached to their numerous mosques and emmularas religious devotees who made it their voluntary business to teach the Koran. The Arabic is to the vernacular Persian what Sanscrit is to the Indian vernaculars, and hence the veneration and attention paid to it by all Mahomedans. Under the British Government were established several Madrisas to cultivate this

language, and they continue in existence to the present day. Like the Sanskrit, it is unsuited for popular education; but for its great intrinsic merits, a knowledge of it is required by the Indian Universities.

II. VERNACULAR EDUCATION.

The vernaculars of India are very numerous. Mr. Bright, M.P., in a speech in the British House of Commons stated there were 18 of them, spoken by 18 different nations. Their grand characteristic is that they are spoken alike by men and women, old and young, and high and low. The principal of them are the Hindi, Bengali, Punjabee, Mahrathi, Guzrati, Tamil, Telugu, Ooria, Persian, and Urdu. Although poor in literature, history, science, and philosophy, and not used as the language of the laws and religion, they were used everywhere for common speech, accounts, commerce, correspondence and the other purposes of daily life. They were extensively taught in every village, in indigenous schools, of which Mr. W. Adam, in his first Report on Vernacular Education, in 1835, calculated in Bengal and Behar alone 100,000, giving "an indigenous elementary school for every thirty-one or thirty-two boys of the school-going age, as there were no indigenous girls' schools." This included the Persian and Urdu as taught by the village *Moonshees*, as well as the pure Indian Vernaculars as taught by the village *Gurus*. Mr. Howell's statement that "there are in India at least twenty-five millions of children of a school-going age, of whom only 682,691 receive more or less instruction in our schools," although correct as regards the Government and Aided schools, is nevertheless not a fair statement of the case. In the first place, it must be remembered, that the twenty-five millions of children of a school-going age is too large a proportion for a population of two hundred millions, and many times in excess of the proportion in Prussia,—one of the most widely educated countries in the world. Next, that a great part of them are not under British rule. Then we must deduct a good half for female children, who are not at present within the pale of educational operations. And lastly, we must add the children taught in the indigenous village schools. The result will show, that the proportion of the educated to the uneducated children is by no means so insignificant as implied by Mr. Howell. Indeed, we might have known this from our own experience independent of Mr. Adam's Reports. The fact of the matter is from time immemorial it has been held to be a stain upon a respectable member of native society not to be able to read and write his mother tongue. Hence the practical division of the people into *Bhadro* (respectable) and *Etur* (vulgar), which are synonymous with the educated and the ignorant, and hence also the fact that

there is hardly a village in India where families belonging to the former do not instruct their male children in reading and writing.*

Now I will freely admit that this indigènous vernacular education is very poor; but surely, when the people themselves are already spontaneously at work after their own fashion, it should not be difficult to extend the scope and improve the quality of their instruction. The school-going age in India is from 5 to 12; and the elementary schools for the masses contain few older children. At 12, the children of the poor are withdrawn from school; girls get married, and the sons of the rich are sent to English schools. These elementary schools are hence infant schools, which, in civilized Europe and America, are best managed by lady-teachers. For girls no other agency is so suitable, and in a country like India, where the native mothers are universally ignorant, this kind of agency would be specially valuable. But that agency has yet to be created. With a few exceptions in the Presidency towns and Missionary establishments, due to the philanthropy of the Christian world, female teachers are not to be found even for the daughters of the rich. It is to be hoped, however, that in course of time this crying want may be supplied through such benevolent efforts as those of Miss Mary Carpenter and others interested in that work. Meanwhile something must be done, and we must try to do the best we can with such instruments as are to be found in the country. On the large scale our infant-school teachers for the present must consist of males; but, if properly superintended, even from them much good may be obtained. *The grand principle for these schools should be to impart European knowledge in a popular and vernacular dress.* The Rev. J. Long in his introduction to his edition of Mr. W. Adam's Reports on Vernacular Education, published under the authority of the Government of India, has fully described the various attempts made on this basis during the present century down to this time, from which I shall make some extracts.

"Mr. Ellerton at Malda, established some vernacular schools in the beginning of this century."

"In 1814 Mr. May, a missionary, began his first vernacular school in the Dutch Fort of Chinsurah." In 1818 he had "thirty-six schools and 3,000 pupils, when he died, succeeded by Mr. Pear-

* This sentiment is well expressed in the following *Sloka*.—

মাতা শত্রু পিতা বৈরী যেন বাল নপাঠিত ।

সভা মধ্যে মশোভন্তে হংসমধ্যে বক যথা ॥

Parents, who neglect the education of their son, are his enemies, and as much an anomaly in society as a stork in a colony of geese.

son, who with Mr. Harley still further improved the system. The success of these schools was so remarkable that it attracted the attention and support of Government. In 1816 Captain Stewart opened two vernacular schools at Burdwan in connection with the Church Missionary Society; in 1818 he had 10 schools and 1,000 pupils. In 1819 the Calcutta School Society undertook the management of a number of vernacular schools in Calcutta. In 1817, Dr. Marshman of Serampore wrote on a system of national education, and the Serampore Missionaries established 100 schools among the natives, which received the first year 8,000 rupees in subscriptions and donations. Previous to 1817, Mr. David Hare had devoted his remaining years, and savings, to Native Education. Mr. Hare's efforts were directed, in the first place, toward the encouragement of the vernacular; he supplemented the deficiencies of the *guru* Patshalas by the employment of inspecting Puadits and the grant of printed books. He then established a sort of Central Vernacular School directly under the School Society. This was a large institution and numbered about 200 boys. It was the best vernacular school of the day. Distinguished lads from the vernacular schools were sent to the Hindu College, in which the society always maintained 30 boys. An English school was established afterwards, adjoining the Central Vernacular School, a number of select boys from which would attend the English classes also. In 1821 the school society (established under the presidency of the Marquis of Hastings in 1818), had 115 vernacular schools containing 3,828 scholars. In 1819, the London Missionary Society directed its attention to vernacular schools, and established them in 1820 at Chittla and other places in the neighbourhood of Tollygunge. The Calcutta Church Missionary Association had for many years 600 children under instruction, and the Baptist Missionary Society also several hundreds. Miss Cooke began, in connection with the Church Missionary Society, *Female Schools* in Calcutta in 1821, after the failure of some previous desultory efforts by a few young ladies. In 1822 she had 22 schools and 400 pupils. The *Central School* was founded in 1824, and the Agarpara Orphan Refuge in 1827. About 1822 the Christian Knowledge Society began the system of "*School Circles*," each circle containing five Bengali schools and one Central School.

"A few desultory efforts continued to be made in subsequent years, which were entirely neglected in the first rush to the English schools, and in the heat of the battle which raged with fury between the Orientalists and Anglicists. They were resumed by Mr. W. Adam, who on the 2nd January 1835 addressed a letter on the subject of popular education to Lord W. Bentinck, and was appointed by his Lordship to enquire into the state of Vernacular Education in

Bengal and Behar. Mr. Adam submitted to Government three most valuable Reports on it, recommending that the modern vernacular education should be engrafted on the old village system of indigenous schools. But his plans were rejected by the Calcutta Council of Education, at which he resigned his office in disgust.

"In 1844 Lord Hardinge established 101 Vernacular Schools, but they failed as they were placed under no proper supervision.

"In 1843 Mr. Thomason commenced his plans of popular education on Mr. Adam's model, in the N. W. Provinces, and in 1845 issued a circular to Collectors and their subordinates, pointing out how vernacular reading, writing, arithmetic, and mensuration bore on the people's interests, and directing that they should encourage the village teachers whom the people select. An Inspector was appointed to report upon village schools. Vernacular libraries were formed for distributing elementary vernacular works among the village schools; lists of the works proposed for study were published, and rewards for the proficiency of their pupils offered to the school-masters." This plan in the North-West Provinces more or less modified has proved eminently successful, and will remain a lasting monument to the fame of the late Mr. Thomason. His success has led to the introduction of a similar system into the Punjab, Oude, and other parts of India; and now it is proposed to do the same in Bengal. This subject has been pressed upon the Government of India by Home Despatches in 1854, 1859, and 1864.

"The Indian Educational Code is contained in the Despatches of the Home Government of 1854 and 1859. The main object of the former Despatch is to divert the efforts of the Government from the education of the higher classes, upon whom they had up to that date been too exclusively directed, and to turn them to the wider diffusion of education among all classes of the people, and especially to the provision of primary instruction for the masses. Such instruction is to be provided by the direct instrumentality of Government, and a compulsory rate, levied under the direct authority of Government, is pointed out as the best means of obtaining funds for the purpose.

"The medium of education is to be the vernacular languages of India, into which the best elementary treatises in English should be translated. Such translations are to be advertised for, and liberally rewarded by Government, as the means of enriching vernacular literature.

"The existing institutions for the study of the classical languages of India are to be maintained, and respect is to be paid to the hereditary veneration which they command.

"All that remained for Government to do for the higher classes was to establish Universities to complete the educational machinery in each presidency."

In 1864 Sir Charles Wood wrote!—

“Those principles are, that as far as possible, the resources of the State should be so applied as to assist those who cannot be expected to help themselves, and that the richer classes of the people should be gradually induced to provide for their own education.”

The educational policy for India is therefore very clear.

Now the present machinery for vernacular education, and the best mode of extending vernacular education, are described in a letter dated 24th August 1867 from the Rev. J. Long to His Excellency Sir John Lawrence, Governor-General of India.

Mr. Long considers the existing system of Vernacular Education to have worked well, its principal features being: 1. *A Director of Public Instruction*; 2. *Twenty Normal Schools* in various parts of the country, to qualify vernacular teachers; 3. *Model Schools*, supported by Government; 4. *Grant-in-aid schools*; 5. *Guru schools*; 6. *Vernacular scholarships*. He proposes, however, certain alterations and expansions, the chief among which are the appointment of a *separate Director of Vernacular Education*, the Government grant to the *Guru schools to be three-fourths*, the education of the *ryots and working classes*, *female education*, *Mahomedan education*, *agricultural instruction*, and *greater encouragement of vernacular literature*.

The next phase of the Vernacular Education is a correspondence between the Governments of Bengal and India relating to the mode of levying a *local educational cess* to meet the cost of Elementary Vernacular Education for the lower classes. The last letter of Mr. Bayley, Secretary to the Government of India, on the subject, April 28th, 1868, was urgent.

The latest utterances upon this question were Mr. Howell's paper read at the last Meeting of the Bengal Social Science Association, and Mr. Bayley's Address at the last Convocation of the Calcutta University, both recommending Vernacular Education and appealing to the educated natives for support and co-operation.

III. ENGLISH EDUCATION.

English is the language of Religion, History, Government, Law, Politics, Philosophy, Literature, Sciences, Arts, Commerce, Society, Domestic life and Public Opinion of the British race. It not only combines the characteristics of the Oriental Classics and Vernaculars; it does something more, it reflects the busy activity of a foremost race. Its civilizing action is hence most prodigious. The English community in India has a great mission. Though small and scattered, it is composed mostly of educated and energetic adults in the prime of life, each of whom is calculated to become a separate centre of civilization, whose influence for good upon the surrounding

population is great or small in exact ratio as they are acquainted with, or ignorant of, the English language. The action of that agency is bounded only by the limits of the British Empire. While the Vernaculars of India are mere local dialects, serviceable only for local purposes, and not understood beyond their local limits, and the Oriental classics confined to the learned few, *English* has become the *lingua franca* of the whole country, being spoken all over India, and used for all official transactions. By a knowledge of this language a Bengali, born and brought up in Calcutta, may be usefully employed in Madras or Bombay without any hardship or inconvenience; and by the present constitution of the public service, this contingency is provided for to secure the greatest efficiency obtainable in the working of our Civil Administration. It has, besides, a European interest and money value.

The English language is a perfect treasury of European civilization, and a knowledge of it is the best passport to success and highly-paid situations. The value of an English education to the Indian student is hence easily understood. Both intellectually and pecuniarily it stands high in his estimation; socially, politically and commercially, it brings him in connection with the most advanced nations of the world; and morally, it lifts him out of the rusty groove of his ancestors and fills his mind with the highest kind of instruction.

At the beginning of the present century there was no systematic plan of native education in English; but a few individuals here and there managed to acquire it by help of private teachers. From these gentlemen, under the auspices of Sir Hyde East, there originated a spontaneous movement in the native community of Calcutta, which eventually led to the foundation of the Hindu College and Oriental Seminary. The first Englishman who took a warm personal interest in the English Education of the natives was the late David Hare, whose wonderful success attracted the notice of all philanthropists, and ultimately obtained the recognition of Government. This was followed by the opening of an English school by the Rev. Dr. Duff, which was the signal for the establishment of similar schools by other Missionary Societies. The popularity of these Institutions was so great that they commenced to empty the vernacular schools, and then a great war arose between the Orientalists and the Anglicists, which, during the administration of Lord William Bentinck, finally resulted in the establishment of English schools by Government. From this time forth the progress of English education in India has been most marvellous, which received a still greater impulse by the substitution of English for Persian as the language of the Law Courts. The achievements of this English education in the last forty years have been most startling. It has mobilised the inert Hindu, and leavened the entire Indian Society from

one end of the country to the other. It has awakened a sense of common nationality among the heterogeneous races. It has weakened the hold of a barbarous superstition. It has destroyed the force of tenacious customs. It has loosened the bonds of female slavery. It has surmounted the obstacles of caste, and thrown open lucrative professions to the competition of millions. It has promoted trade, the administration of justice, the purging of the Law Courts, the study of modern science, and the improvement of Municipal institutions. In fine it has nearly Europeanized the whole country, which, with the aid of English enterprise, bids fair in no distant time to rival other portions of the globe inhabited by the Aryan races. The foundation of the Indian Universities was the last expression of this movement, and the vast number of candidates who present themselves at their examinations is a test of the firm hold which English education has obtained on the affection of the people.

At the same time the cost, to the State, of the machinery for English education is said to be very great, being, according to Mr. Howell, Rs. 240 a year on the education of every graduate in our Indian Universities. This machinery consists in each Governorship, of a Director of Public Instruction, Inspectors and Sub-Inspectors of Schools, Government Schools and Colleges, Aided Schools and Colleges, and Private Schools entirely independent of Government; and over all these a University in each Presidency. But the number of graduates is scarcely a measure of the amount of good which English education is doing. For every successful graduate there are at least fifty boys who receive no English education but who never graduate at all, and yet who must become better men than if they had never entered an English School.

And here I beg to quote the "Resolution by the Government of India, Financial Department, No. 2296, dated Fort William, the 31st March 1870.

"Read again Resolution No. 3233, dated 8th September 1869.

"Read docket from the Home Department, No 61, dated 2nd February, with enclosure, forwarding a reply by the Government of Bengal to the above Resolution.

"RESOLUTION.—In the report now received from the Home Department, the Government of Bengal complains of the terms of the Resolution of the 8th of September, and controverts some of the assertions that it contains.

2. "The object of that Resolution was generally to invite attention to the large expenditure in Bengal for giving an advanced education to classes of the population who, it was believed, might be expected to provide for their own education, and had ample inducements to do so, without much, if any, pecuniary assistance from the State. Considering the very limited funds available for

the development of education, and the urgent importance of expending whatever money can be allotted by the State for this object in the most economical manner; the Government of India invited the Government of Bengal to enquire whether the time had not come, and whether means could not be found, for setting free some of the funds now devoted to high English education.

3. "The Government of Bengal appears to have regarded this invitation as indicating disapproval of the principle upon which the Educational Department is administered in the Lower Provinces.

4. "It is urged, in the first place, that to take cognisance only of the imperial income and expenditure on account of education in Bengal, without at the same time referring to the sums raised and spent by the Local Government which do not appear in the imperial accounts, is calculated to lead to inferences unfair to the people of Bengal, and injurious to the cause of education there.

5. "The Government of India regrets that the Government of Bengal should have deduced from the Resolution of September inferences, in no way intended by the Governor-General in Council. That Resolution had reference only to the effect of the expenditure for education in Bengal upon the imperial finances, and it would not have been consistent with its object to add to the figures which showed this effect any local revenues or expenditure. Doubtless, no complete opinion can be formed of the progress of education in Bengal without taking as much note of local as of imperial income and expenditure upon it; and any account of the operations of the Educational Department which excluded local income and expenditure would be wholly unsatisfactory. But it does not follow that it was improper in the Resolution of September to deal with the imperial receipts and expenditure only; for the Government of India was considering nothing else. It is very desirable that all possible misunderstanding on this point should now be removed.

6. "Further, the Government of Bengal urges that it is a mistake to suppose that the bulk of the State expenditure for education in Bengal is for *high English education*, and asserts that not more than about £54,000 is so spent. The Resolution of September stated only the general impression of the Government of India based upon the imperial accounts, in which the classification of educational expenditure is not very detailed. Dividing the imperial educational expenditure, so far as the imperial accounts furnish the means of doing so, between English and Vernacular education, and distributing the expenditure not susceptible of classification rateably between these two heads, the Government of India find that more than three-fourths* of the gross imperial expenditure on education in Bengal in 1868-69 was on account of English educa-

* The exact figures are £150,768 out of £200,059 or 75 35 per cent.

tion. Calculated in the same way, the earlier figures exhibit a still larger proportion of the expenditure as devoted to English only. The Governor-General in Council acknowledges that the proportion expressed by him agrees very much with this figured result.

7. "He is, however, glad to find from the educational section of the Administration Report of the Lower Provinces for 1868-69 (*vide abstract in the Appendix*) that a much larger proportion of the unclassified expenditure than was supposed is on account of Vernacular education. Dividing the figures on pages 216 and 217

• *Bengal Administration Report for the year 1868-69.*

EDUCATION.

Higher Education—

	Rs.	Rs.
Government Colleges affiliated to the University in Arts	... 1,91,456	
Private ditto ditto 25,720	
Higher and Middle Class Government English Schools	... 2,29,730	
Ditto private ditto 2,00,334	
Ditto ditto for girls 18,673	
Scholarships in Government Colleges 60,252	
		A 7,26,195
	Proportion of C	1,98,727
	Rs. 9,24,922 or	
		£92,492
		60 96

Vernacular Education—

Government Vernacular and Lower Schools	... 67,807	
Private ditto ditto 1,86,939	
Ditto ditto for Natives 37,163	
Government Normal Schools	... 1,15,219	
Private ditto 9,336	
Government Scholarships tenable in Schools	.. 43,411	
Endowed ditto ditto 202	
		B 4,65,067
	Proportion of C	1,27,268
	Rs. 5,92,335 or	
		£59,234
		39 04
Direction	... 45,075	
Inspection	... 2,48,240	
Miscellaneous	... 32,680	
		C 3,25,995

Special—

Law, Medicine, and English Colleges	... 1,26,985	
Government Madrasahs	... 17,731	
" Schools of Medicine	... 45,335	
School of Art	... 19,088	
Ditto (special)	... 1,000	
Special Arabic, Sanscrit, Medical, and Engineering...	... 27,544	
		2,37,733
	Total	17,54,990

of that report between English and Vernacular, and distributing the charge for direction, inspection and miscellaneous rateably between the two, the Governor-General-in-Council finds that £92,492 were spent upon English, and £59,234 on Vernacular education, being in the proportion of about 60·96 and 39·04 per cent, respectively.

8. "The difference between these figures and those given by the Government of Bengal arises probably from that Government attempting to distinguish between *high* and *other* English education. It is scarcely possible to make this distinction upon any satisfactory basis; and for the purposes with which the Government of India recorded the Resolution of September 1869, all English education must be classed as high.

9. "The principle which the Government of India had in mind in the Resolution of September applies alike to all English education, *viz.*, this, that the motives which induce the people to seek it are *prima facie* sufficient for its rapid development without any contribution from the imperial finances. It is notorious that the same assertion can by no means be made in regard to Vernacular education. It may, it is believed, truly be said, in respect even to the most intellectually-advanced Provinces of India, such as Bengal, that the desire for Vernacular education, or, as might distinctively be said, for education in order to develop the intellectual powers, apart from the immediate purpose of securing material advantages, is so low as perhaps hardly to exist. It is undeniable that in this form education needs, and ought to receive, much artificial stimulus and encouragement.

10. "The Government of India is glad to perceive that though dissatisfied with the terms of its Resolution, the Hon'ble the Lieutenant-Governor and the Director of Public Instruction admit the practicability of gradually, and with discretion, increasing the contributions of those who receive from the State, or by its aid an English education.

11. "The Governor-General in Council is of opinion that this should be kept constantly and prominently in view, and that it should be, in accordance with the views expressed by successive Secretaries of State, the constant aim of the Supreme and the Local Governments, co-operating cordially together, to reduce to the utmost the charge upon the State for English education with a view to render it as self-supporting as possible."

The withdrawal of the Government funds from the support of English Schools at this juncture, as here contemplated, will be however a serious misfortune, although English education may still go on, on a reduced scale, in Missionary and other Schools, the truth being the people pay to a considerable extent for their own education, and if one class of schools be abolished another class will flourish,

maintained by the richer portion of the native community itself. The main sufferers will be the poorer members of the great middle-class who cannot pay.

As a pecuniary investment, English education, though most costly, makes a better return for the money than any other kind of education. The people know this, and are therefore more willing to pay for it than for an inferior article. The Oriental Classical education is the least remunerative, and so the least sought. The Vernacular Education has an intermediate pecuniary value. Though not so lucrative as English Education, still by its means a living may be earned, however humble. The majority of situations in the Vernaculars of the country do not require a high standard of intellectual culture, and offer no inducement for a large expenditure of money. The positions requiring high vernacular qualifications are very few indeed. They are those of the Pundit, the Moulvie, the Vernacular Teacher, and the Vernacular Medical Practitioner. The Pundits and Moulvies find employment in preparing students for the Universities. The vernacular teachers have the widest field for employment, but their emoluments are very low, except in a few cases when they are connected with Government or Aided Schools when they obtain a modest competency. The income of the Vernacular Medical Practitioners is not so limited. Even the Vernacular Apothecaries are often in positions to permit of their adding something to their salaries by receipts from private practice. The Vernacular Licentiates are still more able to do so, as they receive an education nearly as good as the English Licentiates.

The Vernacular Medical Classes are indirectly one of the best feeders of the vernacular high schools, and it is a noticeable fact that since the former were established, the latter have been better attended than before. It follows that if the Vernacular Medical Classes were made more attractive, their influence in promoting vernacular education and literature would be still more satisfactory. To effect this it would be necessary to raise the standard of qualification for admission into the Vernacular Licentiate class of the Medical College, to make the vernacular medical educational apparatus more complete, to extend the period of study, to ascertain the professional qualifications for the vernacular licence by a written as well as oral test, and to confer the vernacular licence through the Calcutta University.*

By doing this we shall promote a comparatively cheap Medical Education, provide cheap Medical advice for the millions, and supply a good motive for improving the Vernacular Education.

* If licences in law and Engineering were given in the vernaculars in the same way, the stimulus to vernacular education would be still greater.

Now, to employ a happy figure of Frederick Von Schlegel, we may represent the three kinds of education I have been describing, as affecting numbers, by a truncated pyramid, of which the Oriental Classical Education will form the apex, the English Education the middle, and the Vernacular Education the base.

I shall next speak a few words on the education of the *Upper*, the *Middle*, and the *Lower Classes* of *Men*, and the *Women* of India.

A.—EDUCATION OF THE UPPER CLASS OF MEN.

The upper class strictly consists of the Indian Princes and Nobles who are not obliged to work for their bread. It might be thought that pride, self-respect, the sense of duty and love of learning, would make this the most advanced class in intellectual progress. Unfortunately the reverse is the truth. With a few honorable exceptions they are a set of lazy, selfish, nvaricious, ostentatious men, ignorant to the extreme, steeped in vice, and leading a sort of existence little better than that of the wild beasts of the forest. Education has hitherto made little or no impression upon them, and in that respect they are not much above the meanest *ryot*. Contemning it themselves they cannot appreciate the value of education in others. For such men it would be a real mercy to be compelled to pay an educational cess, for, if they are satisfied with their own ignorance, they have no right to debar the advantages of education from others who need it most. The day will come when these men will learn their error; for as some of them are now nominated to the Councils of Government, the sorry figures they cut there must deeply hurt their personal vanity, and sooner or later stir them to the quick if from political considerations alone. Not till then will they willingly submit their minds to education,—not till then will the spirit of intellectual emulation enter their order,—not till then will they cease to be the canker that eats into the vitals of the country,—not till then will they be a blessing instead of a curse to their countrymen. A few of them already receive a compulsory education in the Ward's Institutions.

B.—EDUCATION OF THE MIDDLE CLASS OF MEN.

The Middle Class includes the whole of the native gentry, and men who earn their bread by trade and intellectual occupations. It represents the intelligence of the country, and counts in its ranks millions of men more or less educated. The most striking difference between the Indian and English landed gentry, is the perpetual division and sub-division of landed estates generation after generation among the former, till each individual share becomes so small as to be wholly insufficient to support a family; while among the latter, they descend undivided from father to son by the law of

primogeniture. Hence, as a class, the great majority of the Indian landed gentry own small holdings. Then the passion for the possession of land as the best provision for his family is so strongly rooted in the native mind, that every man so soon as he can save a little money immediately invests it in the purchase of landed property. The native gentry are, therefore, all proprietors of land, and the great bulk of them in needy circumstances. But while their attachment to the soil is universal, they are precluded by the pride of caste from cultivating it themselves. The actual cultivation is left to the *Ryot*, the rent paid by whom goes to provide for the commonest wants of his landlord. With all this the landed gentry do not enjoy a happy life. They are forced to seek other occupations to supplement the income derived from land, and in doing so to educate themselves more or less. The great body of them can obtain only a vernacular education and be employed in situations connected with accounts, commercial, agricultural, fiscal, &c., correspondence, documents, and other operations in which writing and reading are necessary. The Vernacular Press is already beginning to open the eyes of this class, and a cheap and well furnished vernacular literature, circulating libraries, and Vernacular infant schools for all, and high schools for a few, will do for them a vast amount of good. Those of them who can afford it may afterwards resort to English schools and obtain the highest University honors.

Every cess imposed upon land falls heavily upon this class of men, while the vast majority of them, from their distressed circumstances, are ill able to pay it. In material comforts there is little difference between many of this class and the better sort of ryots. So, although they will probably receive the largest share of benefit from an improved vernacular education, an educational cess upon land to promote it will become with them most highly unpopular. They compose also the class the richer members of which have almost exclusive possession of the English and Anglo-Vernacular Schools and Colleges, and whose benevolence and wealth are often displayed by voluntary establishment of private Vernacular and English schools for the good of their neighbours in humbler circumstances. This sort of charity will wholly cease if a compulsory cess is collected from them by Government for the support of Vernacular Elementary Schools for the masses.

C.—EDUCATION OF THE LOWER CLASS OF MEN.

The Lower Class includes the aborigines of the country, the cultivators of the soil, and the great mass of labourers who earn their bread by actual bodily toil. This is the great class of *ryots*, born to labor, dressed in rags, eking out with difficulty an existence of wretchedness, scantily fed, spare-limbed, sleeping in miserable huts,

surrounded by filth and squalor, exposed to the inclemencies of the weather, oppressed by all who approach them, and with minds which are perfect intellectual blanks. The very extremity of their condition has roused the sympathies of Government and led to the resolution to ameliorate it as soon as possible. In Bengal, however, this will be a serious undertaking, and will well deserve judgment and prudence as well as liberality and earnestness. The only thing suitable for them at present is vernacular education of an elementary character, leaving the propriety of higher schools to be decided hereafter.

D.—EDUCATION OF THE WOMEN OF INDIA.

The women of India, although constituting one-half of the entire population, gifted by nature with all the attributes of physical beauty, grace, virtue, piety, domestic habits, gentleness of disposition, good breeding, devotion to duty, affection and intelligence, and nominally occupying the social positions of their husbands, are yet in the matter of education entirely on a dead level of ignorance. Notwithstanding the repeated and persevering attempts at female education made by a few individuals from time to time, as a class they remain to this day a virgin soil. Instances are not wanting, especially among native Christians, when their powers of education have been put to the test and found most satisfactory. But as a national question nothing has been done worth mentioning. Of all the great social problems to be solved in this country, this is undoubtedly the greatest. It is useless to hide from ourselves the fact that the degraded condition of the women of India is the fountain-spring of numerous social evils. While in enlightened Europe and America, women are pushing themselves to the front, and claiming for themselves political and intellectual equality with men; in India, they are still jealously shut up in the seclusion of the zenana, and denied the commonest benefits of education and liberty. This is not a sound state of things. It must be removed. And the subject demands the earnest consideration of every right-thinking man who has the true interests of the nation at heart. Now, for the sake of the women alone, the vernaculars of the country deserve to be enriched by im-

As to the pecuniary means: when the British Parliament, according to the most recent views, is about to sanction, by passing Mr. Forster's Education Bill, a heavy expenditure out of the National revenues for the promotion of popular education in the British Isles, I may venture to conclude that any sacrifices on a similar object in India, out of the Indian Treasury, will meet with the approbation of all men of political wisdom and experience.

In conclusion, I think I may be allowed to sum up that all the three kinds of education I have described are necessary to a complete scheme of National Education for India, and deserving of the patronage of Government, the *Oriental Classical* as a complement to the vernacular languages for their refinement and improvement, the *Vernacular*, for the largest diffusion of knowledge, and the *English*, for the highest intellectual and moral development, the most successful cultivation of the physical sciences, the political education and consolidation of the Nation, and as the best preparation for filling all responsible positions in the country.

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tunities of forming an accurate opinion of his professional acquirements and of his general character. For the space of six months Mr. Chuckerbatty assisted me in prescribing for the outpatients, of University College Hospital, and during this time treated a great number of cases of various diseases. Subsequently Mr. Chuckerbatty obtained, after a public examination, the important office of Physician's Assistant to Dr. Walshe and to the late Dr. Thomson; and as I officiated during part of the time for Dr. Thomson, I had again an opportunity of observing Mr. Chuckerbatty's extensive knowledge of his profession. I can conscientiously say that there are few men of whom I have formed so high an opinion as I have of Mr. Chuckerbatty. He has diligently applied a mind of no common order to the study of Medicine, and few men leaving University College carry with them so large a stock of professional knowledge, or one endowed so largely with the powers which can extend it.

I can only add that Mr. Chuckerbatty's amiable disposition and agreeable manners are certain to render him esteemed and regarded by all who know him.

E. A. PARKES, M.D.,

Professor of Clinical Medicine,
University College Hospital.

3, UPPER SEYMOUR STREET, PORTMAN SQUARE,
August 10th, 1849.

III.—From Dr. C. J. B. WILLIAMS, late Professor of Medicine in University College, Consulting Physician to the Hospital for Consumption, Brompton, &c.

Mr. S. Goodeve Chuckerbatty was a most assiduous and intelligent student at my lectures and at the Hospital during the period of four years, and completed his medical education in such a manner as to do great credit to himself and his instructors. At the latter part of this period he devoted his time principally to Practice of Medicine, and gave evidence of an extensive and familiar acquaintance with the science and art of Medicine as taught and practised in England. I have therefore much pleasure in recommending him as a highly accomplished practitioner, and in all respects an estimable man.

C. J. B. WILLIAMS, M.D.

7, HOLLES STREET, CAVENDISH SQUARE,
August 3rd, 1849.

IV.—From Dr. WIL SHARPEY, F.R.S., Professor of Anatomy and Physiology in University College, London, and one of the Examiners at the University of London.

Being well acquainted with Mr. S. Goodeve Chuckerbatty, and having watched his progress with much interest during his attend-

credit. The opportunities I have had of appreciating your talents and character by private intercourse, have given me a very favourable opinion of you in other respects; and I shall consider it a great misfortune, on public grounds, if your application for an Assistant Surgeon should be unsuccessful. Of this I am convinced, that your appointment would not be more honourable to yourself than advantageous to the East India Company's service.

Pray believe me to be,

Yours very truly,

JOHN LINDLEY,

Professor of Botany in University College.

S. G. CHUCKERBUTTY, Esq.

VII.—From RICHARD QUAIN, Esq., F.R.S., *Professor of Anatomy in University College, and Surgeon to University College Hospital, London.*

Mr. S. G. Chuckerbatty has for some years been a most attentive Student of his profession, both in the classes of this College and in the Clinical Hospital. He has always manifested the possession of excellent abilities, and has given constant proof of untiring industry. It would be unjust to Mr. Chuckerbatty if I omitted to bear testimony likewise to his general conduct and demeanour. He has invariably been a most exemplary person in all respects, and has, in short, always conducted himself as a Gentleman, as well as a good Student.

R. QUAIN,

Professor of Clinical Surgery,
University College, London.

KEPPEL STREET,
August 10th, 1849.

VIII.—From THOMAS MORTON, Esq., *Fellow of the Royal College of Surgeons, London, Surgeon to University College Hospital, and Surgeon to the Queen's Prison.*

I have much pleasure in stating that I have been well acquainted with Mr. Chuckerbatty during the three years he has passed in the study of Medicine and Surgery at University College, where he highly distinguished himself in the annual public examinations, obtaining several very high honours. He also served as a Dresser to the late Mr. Liston, much to the satisfaction of that eminent surgeon. I can, therefore, recommend Mr. Chuckerbatty as in a very high degree qualified to perform the duties of Medical Officer to any public institution.

THOMAS MORTON, F.R.C.S.

Surgeon to the Queen's Prison, and Assistant
Surgeon to University College Hospital, &c.

7, WORKEN PLACE, TRINITY SQUARE,
May 18th, 1848.

IX.—From ROBERT EDMOND GRANT, M.D., F.R.S., F.L.S.E., *Professor of Comparative Anatomy and Zoology in University College, London.*

I have great pleasure in certifying that I have been most intimately acquainted with Mr. S. G. Chuckerbutty for several years, and that he has been a most diligent, zealous, and successful student at the Medical School and in the Hospital. His private character and conduct are most praiseworthy and exemplary, and he possesses considerable attainments in general science and literature. In the classes of Comparative Anatomy and Zoology, he gained the highest prizes awarded to merit, and showed the possession of very extensive and accurate knowledge of these departments.

ROBERT E. GRANT, M.D.,
Professor of Comparative Anatomy and Zoology,
University College, London, &c.

UNIVERSITY COLLEGE, LONDON,
August 13th, 1849.

X.—From W. H. WALSHE, M.D., *Professor of Clinical Medicine in University College Hospital, and Professor of Pathological Anatomy in University College, London; Physician to the Hospital for Consumption, Brompton* (at the time this Testimonial was written), &c.

I certify that Mr. S. G. Chuckerbutty acted as my Clinical Clerk for a period of three months, and discharged the duties of the office with remarkable care and zeal. He evinced a constant desire to increase his stock of information, and has in all respects made the best use of the opportunities afforded him by his official position. His clinical knowledge I conceive to be materially above the average of that possessed by students of his standing.

W. H. WALSHE, M.D.
UNIVERSITY COLLEGE,
May 13th, 1848.

XI.—From H. H. GOONEVE, M.D., F.R.S., *Professor of Anatomy in the Medical College, Calcutta.*

I have had the pleasure of knowing Mr. S. G. Chuckerbutty since his first entrance as a student in the Medical College of Calcutta, in 1843. He was there distinguished by the zeal, industry, and ability which have ever since marked his progress in an eminent degree. In 1845 he accompanied me to England, where his career has been attended by such noble success, that it requires no testimony from me to establish his character.

He is a young man of great ability, possessing very extensive professional and general acquirements, at the same time that his

XIV.—*From the REV. F. D. MAURICE, Chaplain of Lincoln's Inn, and Professor of General and Ecclesiastical History, at King's College, London.*

I have had the pleasure of knowing Mr. S. G. Chuckerbuddy during a great part of his residence in England very intimately. I have the highest opinion of his moral character, of his general capacity, of his devotion to the particular studies which he has been pursuing in this country, and of his desire to make his talents and knowledge available for the benefit of the natives of India. He is a consistent Christian,—of course without the least arrogance towards his Hindoo brethren; with such European cultivation, and retaining the sympathies of his birth, I conceive no one could be better fitted to assist in raising the moral tone of his countrymen, or to serve as a link between them and the English.

FREDERICK D. MAURICE,
Chaplain of Lincoln's Inn, and Professor of General
and Ecclesiastical History, King's College, London.

XV.—*From HENRY CHARLES BETTS, Esq., Cupper to University College Hospital, London.*

I beg to certify that Mr. S. Goodeve Chuckerbuddy is fully qualified to perform the operation of cupping.

HENRY CHARLES BETTS,
Cupper, University College Hospital.

70, WIMPOLE STREET, LONDON,
September 6th, 1849.

XVI.—*From GEORGE VINER ELLIS, Esq., F.R.S., Junior Professor of Anatomy in University College, London.*

This is to certify, that Mr. Chuckerbuddy was a very diligent student in the dissecting-room of this College during the period of his studies here, and laboured most assiduously in obtaining a knowledge of practical anatomy.

GEORGE VINER ELLIS,
Junior Professor of Anatomy.

UNIVERSITY COLLEGE,
August 23rd, 1849.

IV.—*From the REV. F. D. MAURICE, Chaplain of Lincoln's Inn, and Professor of General and Ecclesiastical History, at King's College, London.*

I have had the pleasure of knowing Mr. S. G. Chuckerbatty during a great part of his residence in England very intimately. I have the highest opinion of his moral character, of his general capacity, of his devotion to the particular studies which he has been pursuing in this country, and of his desire to make his talents and knowledge available for the benefit of the natives of India. He is a consistent Christian,—of course without the least arrogance towards his Hindoo brethren; with such European cultivation, and retaining the sympathies of his birth, I conceive no one could be better fitted to assist in raising the moral tone of his countrymen, or to serve as a link between them and the English.

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HENRY CHARLES BETTS.
Cupper, University College Hospital.

70, WHITEFORD STREET, LONDON,
September 5th, 1849.

XVI.—*From GEORGE VINER ELLIS, Esq., F.R.S., Junior Professor of Anatomy in University College, London.*

This is to certify, that Mr. Chuckerbatty was a very diligent student in the dissecting-room of this College during the period of his studies here, and laboured most assiduously in obtaining a knowledge of practical anatomy.

GEORGE VINER ELLIS,
Junior Professor of Anatomy.

UNIVERSITY COLLEGE,
August 23rd, 1849.